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FERTILIZER SALES AND SERVICEMAN. TEACHERS COPY.

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TEXAS A AND M UNIV., COLLEGE STATION

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BIBLIOGRAPHIES, *AGRICULTURAL SUPPLY OCCUPATIONS,

THE PURPOSE OF THIS DOCUMENT IS TO PROVIDE A STUDY GUIDE FOR STUDENTS PREPARING TO BE FERTILIZER SALES AND SERVICEMEN IN A COOPERATIVE EDUCATION PROGRAM. IT WAS DESIGNED BY SUBJECT MATTER SPECIALISTS ON THE BASIS OF RECOMMENDATIONS BY A STATE ADVISORY COMMITTEE, TESTED IN OPERATIONAL PROGRAMS, AND REFINED BY A VOCATIONAL AGRICULTURE TEACHER. UNITS INCLUDED IN THE COURSE ARE -- (1) AGRICULTURAL SALESMANSHIP, (2) BUSINESS ORGANIZATION AND FUNCTION, (3) BUSINESS PROCEDURES, (4) FERTILIZER, (5) SOILS AND SOIL PROBLEMS, (6) FERTILIZER NUTRIENT SOURCES, (7) PLANT FOOD ELEMENT FUNCTIONS, (8) FERTILIZER USE PRINCIPLES, (9) FERTILIZER APPLICATION METHODS, AND (10) REGULATIONS AND CONTROL. MATERIALS IN EACH UNIT INCLUDE INFORMATION SHEETS, ASSIGNMENT SHEETS, ASSIGNMENT ANSWER SHEETS, TOPIC TESTS, AND TEST ANSWER SHEETS. THE MATERIAL MAY BE APPROPRIATELY USED IN A VOCATIONAL AGRICULTURE COOPERATIVE EDUCATION PROGRAM FOR STUDENT READING AND AS A GUIDE TO STUDY. STUDENTS SHOULD BE EMPLOYED PART-TIME IN FERTILIZER SALES AND SERVICE, MALE OR FEMALE, AND 16 TO 20 YEARS OLD. THE COURSE WOULD REQUIRE 175 PERIODS OF 50 MINUTES EACH. THE PRINTED DOCUMENT IS LOOSELEAF. THIS DOCUMENT IS AVAILABLE IN LIMITED NUMBERS FOR \$2.50 EACH FROM THE AGRICULTURAL EDUCATION TEACHING MATERIALS CENTER, TEXAS AGRICULTURAL AND MECHANICAL UNIVERSITY, COLLEGE STATION, TEXAS 77843. (JM)

Agricultural Cooperative Training

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ACKNOWLEDGEMENT

This course of study is designed for the vocational agriculture student of Texas who is enrolled in a Cooperative Part-time Training Program in Agriculture.

Much of the material for this course was prepared by J. T. Wiggs, Vocational Agriculture Teacher of Wills Point, Texas, who assisted at the Teaching Materials Center for a four-week period during the summer of 1966.

Members of the staff of the Teaching Materials Center contributed also to the preparation of the course of study.

Several sections of the materials are based upon work produced at the Center for Research and Leadership Development in Vocational and Technical Education at The Ohio State University, Columbus, Ohio.

John Holcomb, Coordinator
Teaching Materials Center

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Introduction, Agricultural Salesmanship

OBJECTIVE: To develop an understanding of the importance of salesmanship in agricultural business.

REFERENCES: Required:

1. Information Sheet, 'Agricultural Salesmanship'

Supplemental:

2. Feed and Farm Supplies, The University of Texas, Division of Extension, Distributive Education Division, Austin, Texas
3. Salesmanship Fundamentals, Ernest and Davall, 2nd edition, McGraw-Hill Book Co., New York, N. Y.
4. Let's Analyze and Sell, The University of Texas, Division of Extension, Distributive Education Division, Austin, Texas

QUESTIONS
or
ACTIVITIES:

1. Name and give an example from your experience of three reasons customers fail to buy.
2. What are the main differences between need and desire for a product?
3. What six things must the agricultural salesman know to be successful?
4. Give five principal advantages of agricultural sales as a career.
5. What is one of the best forms of advertising?
6. Who benefits from efficient selling?

UNIT: Agricultural Salesmanship
TOPIC: Introduction, Agricultural Salesmanship
(Assignment Sheet continued)

7. Good selling does two things connected with human wants. What are the two?
8. What five basic decisions are made by a customer before purchasing an item?
9. What product should be sold to a customer?
10. Give two things that help to make permanent customers.
11. Give a good short definition of "selling".

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Information Sheet
on
AGRICULTURAL SALESMANSHIP

Selling is the key function of all business activity. This is as true in agriculture as in other areas. Selling is the act of assisting and persuading individuals or groups to make a buying decision which is to the mutual advantage of both the buyer and the seller.

Selling is really explaining to, persuading, and reminding the public of a particular business concern and of the opportunities and values to be gained from doing business with this concern.

The retailer's function is that of selling goods and services to the ultimate consumer. This is the final step in the distribution of agricultural goods and services.

Efficient salesmen realize that customers are lost because of:

1. Poor service rendered
2. Discourteous treatment received
3. Indifferent attitude exhibited on the part of the salesman

The salesman must know the psychology of selling if he is to become a successful salesman. In other words, he knows that a customer buys primarily because of need and desire. These are influenced by reason, by emotion, or by a combination of these. A person may need something, but does not buy until he desires it, i. e., he feels the need.

In summary, to be successful, the agricultural salesman must know the selling process, the merchandise itself, and the firm, as well as understand himself, his relations to the customer, and the customer.

Here is an opportunity for a salesman to (a) deal directly with the public, (b) help other people make decisions, (c) face something new everyday, (d) know that his worth is quickly recognized in terms of advancement, and (e) enjoy the prestige of big business. This big business is made up of over 1,700,000 retail stores where Americans spend 70 percent of the family income each year.

Agricultural Salesmanship
(Information Sheet continued)

Good selling does not happen incidentally, but is the result of sound training.

Successful selling produces a satisfied customer who in turn becomes the best form of advertising.

The good salesman must realize that everyone benefits from efficient selling. High sales volume not only insures the salesman's position, but also lowers the price of products or services to the customer.

Good selling awakens and satisfies human wants. Selling is a challenge and every customer is an opportunity for a salesman to get positive reaction from the customer on five basic buying decisions, namely; the need, the thing, the source, the price, and the time. Selling is helping the customer to buy intelligently.

The customer will gain the most personal satisfaction from his purchase if the salesman makes sure that the product will best fit the customer's need. When the salesman demonstrates courtesy and a sincere interest to be of service, the result is a permanent customer.

Material for this Information Sheet was taken from Module 4, Agricultural Supply, Sales and Service Occupations, The Center for Research and Leadership Development in Vocational and Technical Education, Columbus, Ohio.

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920-I-2

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

- UNIT: Agricultural Salesmanship
- TOPIC: Meeting the Customer
- OBJECTIVE: To develop an understanding of the importance and techniques in making a good impression with customers.
- REFERENCES: Required:
1. Information Sheet, "Meeting the Customer"
- Supplemental:
2. Let's Analyze and Sell, The University of Texas, Division of Extension, Distributive Education Division, Austin, Texas.
 3. Feed and Farm Supplies, The University of Texas, Division of Extension, Distributive Education Division, Austin, Texas.
- QUESTIONS
or
ACTIVITIES:
1. Why is the first contact with a customer very important?
 2. Why should a salesman be well-groomed?
 3. Why should a salesman like his work?
 4. Give three "earmarks" of good salesmanship.
 5. Give a short description of the proper way to treat a customer.
 6. Select one of your classmates that you know well and fill out the "information needed about a customer" given in part 1-a of the information sheet you are using.
 7. How could you secure the information you gave in question 6 if you did not know the person well, and if he were an adult?

UNIT: Agricultural Salesmanship
 TOPIC: Meeting the Customer
 (Assignment Sheet continued)

8. Pick a store (not the one in which you work) in which you purchased something recently and give your impressions about these characteristics of the store:
 - a. Was the store neat and attractive? What made it appear that way?
 - b. Was the store well-lighted?
 - c. Did the equipment (not the merchandise) look good to you? Why or why not?
 - d. Was the merchandise arranged in a manner you understood, or was it confusing to you? Why?
 - e. Did the person who "waited upon you" have a pleasing appearance? Briefly describe him as he appeared that day.
9. Pick an item from the store in which you work or plan to work and give from memory these characteristics of the product:
 - a. Why is it designed as it is?
 - b. The trade name
 - c. How it is constructed or manufactured
 - d. Its special features
 - e. In what other forms it is available
 - f. What help the store can give if something "goes wrong" with the product
10. Now pick an item your family purchased recently from another store and give the same information as you gave in No. 9 from memory about it.
11. List the preparation a salesman needs to make before he is ready to make a sale.
12. What may cause a salesman to fail to be prompt in greeting a customer?
13. How does the salesman find out about a customer's problem?
14. Give three examples of proper methods of greeting a customer.
15. Give the elements of a good salutation to a customer.
16. Name 11 physical and physiological factors that cause a customer to want to buy a product.
17. Give eight good attitudes for salesmen.

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Information Sheet
on
MEETING THE CUSTOMER

The impression of the agricultural business that the customer carries away often results from his first contact with the salesman. Appearance and actions play an important part in forming this impression.

A well-groomed salesman attracts customers and inspires their confidence. Undivided attention on the job is essential to good salesmanship.

A good approach presupposes a proper attitude toward the job. Love for one's work is expressed in the enthusiasm with which it is carried out. Enthusiasm is shown through words, actions, and expression.

Salesmanship is demonstrated through promptness, alertness, and interest in the customer and his problems.

Treat the customer like a guest. This means that good manners and courtesy are practiced at all times; that the house is in order, neat and clean; that the merchandise is conveniently located; and that the salesman is trained in the fundamentals of selling to maximize the opportunity of being of service to customers.

Points to be considered when meeting the customer:

1. The preapproach Preparation

a. Information needed about the customer

- (1) Name - Address
- (2) Personal characteristics
- (3) Mental make-up
- (4) Hobbies and interests
- (5) Common interests
- (6) Buying habits or policies

b. Sources of this information

- (1) Participation in community activities and events
- (2) Chamber of Commerce information
- (3) Comments made by other members of civic clubs

Meeting the Customer
(Information Sheet continued)

- (4) A personal notebook on customers
 - (5) Past sale records, credit department records
 - (6) Interview with people in the community
 - (7) Local newspaper
- c. Check of facilities and surroundings
- (1) General appearance of the store
 - (2) Lighting
 - (3) Equipment
 - (4) Merchandise arrangement
 - (5) Personnel
- d. Knowledge of benefits the customer will receive from merchandise sold
- (1) Design or appearance
 - (2) Quality of the source - trade name
 - (3) Composition and construction
 - (4) Special features
 - (5) Assortment of sizes, colors, and styles available
 - (6) Service available
- e. Preparation by the salesman
- (1) Neatness of appearance
 - (2) Preparation of an appealing display arrangement
 - (3) Knowledge of contents of the merchandise in stock
 - (4) Knowledge of the contents of newspaper advertising being circulated
 - (5) Knowledge of names, background, and interests of customers
 - (6) Knowledge of the competitors product
 - (7) Preparation of a few selling sentences
 - (8) Preparation of a record of common customer objections and development of methods of meeting them

2. Timingthe Approach

- a. Importance of the impression created by the salesman's appearance and actions
- b. Suggestions for:
 - (1) Promptness - clues for failure in being prompt:

Meeting the Customer
(Information Sheet continued)

- (a) Involved group conversations of salesmen
 - (b) Stock duties
 - (c) Timidity in approaching customers
 - (d) Indifference to the needs of the customers
- (2) Alertness - based on accurate and careful observation; look for clues on:
- (a) How and when to greet the customer
 - (b) When to present the merchandise
 - (c) How to talk about merchandise
- (3) Interest in customer's problem
- (a) Take all the time necessary to understand his problem
 - (b) Probe to determine if problem is what customer first says that it is
 - (c) Determine the procedure to be followed to assist the customer with his problem

3. The Proper Approach - Greeting the Customer

a. Type of salutations

- (1) Conventional
- (2) Question
- (3) Stating a fact about the merchandise

b. Elements of a salutation

- (1) Courteous
- (2) Short
- (3) Requires no decision
- (4) Affirmative
- (5) Emphasizes the desire to serve

c. Tone of voice - pleasant, enthusiastic, distinct, articulate, ordinary

d. Facial expressions

- (1) A pleasant smile
- (2) Cheerful expression

Meeting the Customer
(Information Sheet continued)

Different physical and psychological factors, operating alone or together, motivate a customer to buy a product. Among them are comfort, pleasure, appetite, possession, fear, devotion, curiosity, ornamentation, imitation, construction, and loyalty.

Developing the proper attitudes necessary for success in meeting a customer is important if the student is to develop effective sales abilities. Among them are:

1. Developing professional feeling toward selling
 2. Constant courtesy
 3. Enthusiasm for selling
 4. Interest in customer and his problems
 5. Willingness to develop self-confidence
 6. Developing sincere attitude of service
 7. Developing integrity
 8. Appreciating proper psychology such as gaining the customer's attention and interest, creating a desire, and ending with de-
action on the part of the customer
- *****

Material for this Information Sheet was taken from Module 4, Agricultural Supply, Sales and Service Occupations, The Center for Research and Leadership Development in Vocational and Technical Education, Columbus, Ohio.

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920-I-3

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Presenting Supplies and Services to Customers

OBJECTIVE: To develop an understanding of the steps necessary to a successful sale.

REFERENCES: Required:

1. Information Sheet, "Presenting Supplies and Services to Customers"

Supplemental:

2. Let's Analyze and Sell, Division of Extension, The University of Texas, Austin, Texas

QUESTIONS

or

ACTIVITIES:

1. Give the four steps in a sale.
2. How does step 1 differ from step 2?
3. What brings about step 3?
4. What are some examples of motivating factors for farmers?
5. Name 4 ways attention is directed to a supply or service.
6. Tell how a potential customer may move from attention to interest to desire.
7. To conclude the sale, what does the salesman need to be able to do to secure action?

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Information Sheet
on
PRESENTING SUPPLIES AND SERVICES TO CUSTOMERS

Successful selling requires a careful presentation by the seller. A salesman must recognize the importance of each of the psychological steps in a sale. He must gain the attention, develop interest, kindle desire, and induce action on the part of the customer.

Attracting attention is one thing; developing interest is quite another thing. Attention is more or less involuntary. Almost anything can attract attention; interest is the result of voluntary reaction on the part of the customer. Interest comes only when attention is prolonged voluntarily and is accomplished by concentration.

Next, one must combine the merits of the article with the needs or wants of the customer to kindle desire. Then, by demonstrating a complete understanding of the interest, needs, desires, and motivating factors that cause a customer to buy, the salesman will be able to make a successful sale. Sales are made by showing the farmer how to increase yields, make more profit, or reduce the labor required, etc.

The attention of customers to a supply or service may be secured in many ways.

Reading an advertisement about a beef concentrate
Seeing a new herbicide on a TV commercial
Talking to a neighbor about his new 5-plow tractor
Mailing a circular on early fertilizer purchase discount
Meeting a new petroleum delivery truck on the road
Hearing from a friend about the good service on baler repairs
Reading in the newspaper about a new bulb shipment received at the garden center
Viewing an attractive display of seed at the supply center

Developing interest in a product can be initiated by the customer, the salesman, or serviceman.

Customers can move from the attention, interest, and desire steps very rapidly at times with little or no encouragement. Example - the customer sees a new field sprayer just the size and kind for which he has a preference--the desire is developed. Often, however, the customer's interest in a product needs to be kindled. This can be done by:

Presenting Supplies and Services to Customers
(Information Sheet continued)

Talking to him about the new features on this planter
 Inviting him to a field day where the effectiveness of newly developed herbicides will be shown
 Showing him the results of this product in test trials
 Demonstrating how simple it is to mount this new corn picker
 Pointing out to the customer the number of people in the community who are already using this feed, lawn seed, or grease

Desire for a product may be obtained by relating it to a need of the customer,

Explain how this feed will increase net income by improving an animal's rate of gain.
 Show him, with proof from variety trials, how the new oat variety will stand, thereby reducing all those combining problems.
 Show him that the chemical weed spray will reduce cultivation, allowing time to get the hay harvested, go fishing, etc.
 Sell the merits of the tractor seat, not its cost.
 Provide appointments for the customer to try the product on a trial basis.

To be able to present items effectively, you will need to:

Know the features of the item
 Be able to answer all questions about the item
 Demonstrate its use, operation, value, and advantages

Material for this Information Sheet was taken from Agricultural Supply - Sales and Service Occupations, Module 4, The Center for Research and Leadership Development in Vocational And Technical Education, Columbus, Ohio.

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920-I-4

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Overcoming Customer Resistance

OBJECTIVE: To develop an understanding of the reasons for customer resistance and effective methods of overcoming them.

REFERENCES: Required:

1. Information Sheet, "Overcoming Customer Resistance"

Supplemental:

2. Let's Analyze and Sell, Division of Extension, The University of Texas, Austin, Texas
3. Feed and Farm Supplies, Division of Extension, The University of Texas, Austin, Texas

QUESTIONS
or

ACTIVITIES:

1. Give the "two sides" to every sale.
2. The customer must be convinced that the salesman's product is his best choice, based upon one or more of three factors. What are the three?
3. Give statements that will help overcome customer objection for a product:
 - a. Need:
 - b. Quality:
 - c. Source:
 - d. Price:
 - e. Time:
 - f. Thing

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920-I-4

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Information Sheet
for
OVERCOMING CUSTOMER RESISTANCE

It is natural for people to have sales resistance. Most of them did not come by the money in their possession easily. It is perfectly natural for people to want to get all that they can for the money spent.

Each sale has two sides. The customer must sacrifice something in order to get something else. Since one cannot have everything, each sale means a choice between one product and another product or one product and another form of pleasure.

The customer must decide which of the choices will give the most satisfaction or pleasure.

It is the salesman's job to convince the customer that his product or service will provide this pleasure, satisfaction, or need. If this cannot honestly be done, perhaps he should not make the sale at all. Anything else is high pressure selling that is unethical and cannot be classified as salesmanship. It will invariably lead to ill will and dissatisfaction.

There are several reasons why customers are resistant to purchasing. The first objection is rarely the actual objection. Identify the real reason for such resistance and try to explain away the objection. To do this you are going to need to be well informed on the supply or service. Types of objections are:

1. Need - Objections to need are overcome by stressing the usefulness and benefits of the product.
2. Quality - Objections to quality are overcome by:
 - a. Showing a better quality
 - b. Pointing out a specific feature
3. Source - Objections to the source are met by:
 - a. Providing names and experiences of satisfied customers
 - b. Providing information about the company or by reference to national advertising

Overcoming Customer Resistance
(Information Sheet continued)

- c. Courteously straightening out misunderstandings
 - d. Asking for a fair trial of this new firm or by offering something another firm does not carry
 - e. Others correcting the shortcomings of the salesman if he is at fault.
4. Price - Objections to price are overcome by:
- a. Revealing hidden values - building up values
 - b. Emphasizing the quality or usefulness
 - c. Providing an article that is not as expensive and doesn't have as many selling points
 - d. Knowing competitors product so that any question or different values can be explained
5. Time - Objections to time are overcome by:
- a. Making a future appointment
 - b. Inviting the customer to look at additional merchandise
 - c. Continuing to show a positive interest in the customer whether the salesman is busy or not
 - d. Trying to handle objections promptly as they arise
 - e. Not trying to close a sale until all bonafide objections have been satisfied. Make feelers during the sales presentation to preclude objections to a reasonable closing of the sale because of the time.
6. Thing - Objections to the thing are overcome by:
- a. Showing more suitable goods
 - b. Admitting the validity of objection but showing another feature to offset the objection

Overcoming Customer Resistance
(Information Sheet continued)

- c. Admitting that the objection is reasonable but showing that it does not really apply
- d. Changing the objection into a selling point in favor of the article
- e. Avoiding:

Generalizations which mean nothing
Contradiction of a customer's statement
Display of a negative or discouraging attitude

Again, do not pressure customers to purchase; they are not likely to return if pressured.

Material for this Information Sheet was taken from Agricultural Supply-Sales and Service Occupations, Module 4, The Center for Research and Leadership Development in Vocational and Technical Education, Columbus, Ohio.

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920-I-5

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Closing the Sale

OBJECTIVES: To develop the ability to secure the final step in the selling process; that of closing the sale.

REFERENCES: Required:

1. Information Sheet, 920-I-5.

Supplemental:

2. Feed and Farm Supplies

3. Let's Analyze and Sell

QUESTIONS
or
ACTIVITIES:

1. When is closing a sale easy and almost automatic?

2. What must be the attitude of the salesman toward his function in closing a sale?

3. When is the salesman justified in making concrete suggestions during the "closing" process?

4. When is the right time to close a sale?

5. What conditions precede sale closing?

6. What is the "choice method" in beginning to close a sale?

7. Give seven errors that often lead to failure to buy.

8. Give four good general points for recording sales.

Agricultural Sales and Service
(Information Sheet continued)

4. Not overwhelm the customer with more facts, decisions, etc., then he can face comfortably

Sales are often increased by displaying related merchandise, handling larger quantities, comparing with higher priced merchandise, introducing new merchandise, developing "special" sales, demonstrating new uses for merchandise, and specializing in merchandise for special occasions.

When recording the sale, the salesman, in preparing the sales check, should:

1. Write legibly.
2. Be accurate with items, amounts, and price.
3. List the complete name and address if needed for files or for delivery.
4. Write down any special directions needed to help the customer.

When operating a cash register, make change accurately. Never put a bill away until the customer is satisfied that he has received the correct change. Use the right compartment for paper money and change. Also, learn to count out change properly.

Just because the register bangs shut does not mean that the sale is completed. A proper, courteous farewell often means repeat visits by the customer.

Give the customer a friendly farewell whether or not he makes a purchase and invite him back soon.

Material for this information was taken from Module No. 4, Agricultural Supply - Sales and Service Occupations, The Center for Research and Leadership Development in Vocational and Technical Education, Columbus, Ohio.

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920-I-6

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Fundamentals for Successful Selling

OBJECTIVES: To summarize and reinforce the steps in successful selling.

REFERENCES: Required:
Information Sheet, 920-I-6.

QUESTIONS
or
ACTIVITIES:

1. If you are to be a successful salesman,
 - a. What must you have?
 - b. What must you understand?
 - c. What must you know?
 - d. What must you use?
2. Select the three items at the right of the page in which you feel you are strongest. Write a short paragraph on each explaining your strengths.
3. Select three items at the right of the assignment sheet in which you feel you need improvement. Write a paragraph on each, including how you think you can improve.

Information Sheet
for
AGRICULTURAL SALES AND SERVICE

920-I-6

Fundamentals for Successful Selling

237

<div> <div>To Help Customers Buy Wisely</div> <div>You Must</div> </div>	<div> <div>Have A Wholesome Attitude</div> <div>This Means</div> </div>	<ol style="list-style-type: none"> 1. Keep your personal appearance neat and attractive. 2. Keep enthusiastic about your job. 3. Watch your health. 4. Be helpful to your customers. 5. Be loyal to your store.
	<div> <div>Understand And Like People</div> <div>This Means</div> </div>	<ol style="list-style-type: none"> 1. Get your customers point of view. 2. Serve people as you like to be served. 3. Be courteous, considerate and attentive. 4. Be friendly, but not familiar. 5. Find out what your customer wants. 6. Treat customers as invited guests.
	<div> <div>Know Your Merchandise</div> <div>This Means</div> </div>	<ol style="list-style-type: none"> 1. Know what your store carries in stock. 2. Know the location of each item carried. 3. Know the facts about the merchandise you sell. <ol style="list-style-type: none"> a. Facts about material b. Facts about construction c. Special features and qualities d. How to care for and use the merchandise e. Store's own brands
	<div> <div>Use Good Selling Methods</div> <div>This Means</div> </div>	<ol style="list-style-type: none"> 1. Meet customers promptly and courteously. 2. Present your merchandise with respect and appreciation. 3. Give honest convincing facts about your merchandise. 4. Answer questions and objections fully-- help your customers decide.

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920-I-7

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Evaluating Salesmen

OBJECTIVES: To develop an understanding of the methods employed in evaluating sales personnel and to encourage self-evaluation.

REFERENCES: Required:

Information Sheet, 920-I-7

**QUESTIONS
or
ACTIVITIES:** In the information sheet accompanying this topic are four check sheets.

Your assignment is to fill out each check sheet, making two marks in each item.

The first mark, a small "x", is your evaluation of a salesman from whom you recently made a purchase. If you wish, use a different salesman for each sheet.

The second mark, a small "o", is your own performance in the place in which you work. Use any customer contact during the past two weeks, and use a different one for each sheet, if you wish, but make an honest appraisal of your performance.

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Evaluating Salesmen

OBJECTIVES: To develop an understanding of the methods employed in evaluating sales personnel and to encourage self-evaluation.

REFERENCES: Required:

Information Sheet, 920-I-7

**QUESTIONS
or
ACTIVITIES:** In the information sheet accompanying this topic are four check sheets.

Your assignment is to fill out each check sheet, making two marks in each item.

The first mark, a small "x", is your evaluation of a salesman from whom you recently made a purchase. If you wish, use a different salesman for each sheet.

The second mark, a small "o", is your own performance in the place in which you work. Use any customer contact during the past two weeks, and use a different one for each sheet, if you wish, but make an honest appraisal of your performance.

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Information Sheet
on
AGRICULTURAL SALES AND SERVICE

Check Sheet -- Customer Approach

	Did so effectively	Did so partially	Did not	Could have
1. APPROACHED CUSTOMER PROMPTLY				
a. Was on the lookout for customers				
b. Stopped what he was doing				
c. Approached the customer mentally and physically				
2. WELCOMED THE CUSTOMER				
a. Smiled				
b. Used appropriate approach				
c. Treated the customer as a guest				
3. HELPED TO START CONVERSATION				
a. Adapted himself to situation				
b. Made comment about merchandise				
c. Anticipated customer's interest				

COMMENTS:

Agricultural Sales and Service
(Information Sheet continued)

Check Sheet -- Holding Customer's Interest

1. STUDIED THE CUSTOMER

- | | Did so effectively | Did so partially | Did not | Could have |
|---|--------------------|------------------|---------|------------|
| a. Did not jump at conclusions concerning customer's interest | | | | |
| b. Sized up what would interest customer | | | | |
| c. Made positive statements to reveal customer's interest | | | | |
| d. Determined customer's buying motive | | | | |
| e. Stimulated customer's want or desire for the merchandise | | | | |

2. DISPLAYED MERCHANDISE EFFECTIVELY

- | | | | | |
|---|--|--|--|--|
| a. Made merchandise stand out | | | | |
| b. Handled merchandise appreciatively | | | | |
| c. Appealed to customer's senses | | | | |
| d. Showed merchandise in good light, at eye level, on all sides | | | | |

3. STRESSED CUSTOMER BENEFITS

- | | | | | |
|---|--|--|--|--|
| a. Showed customer how he would gain | | | | |
| b. Showed customer how he would be served | | | | |
| c. Showed customer benefits of owning | | | | |
| d. Stressed to customer how merchandise would meet his problems | | | | |
| e. Gave selling points convincingly | | | | |

4. USED DEMONSTRATION

- | | | | | |
|--|--|--|--|--|
| a. Encouraged customer to handle merchandise | | | | |
| b. Interpreted value of merchandise in terms of dollars invested | | | | |
| c. Dramatized features of merchandise | | | | |
| d. Used showmanship advantageously | | | | |
| e. Secured customer's participation | | | | |

FAIR	
AVERAGE	
GOOD	
EXCELLENT	

Let customer object fully
Did not interrupt
Understood customer
Removed one objection at a time
Did not argue

- Did not hesitate
- Had right complete answers
- Concentrated on what was coming next
- Retained control of situation
- Discovered real, underlying objection

Welcomed customer objections
Created customer confidence
Convinced customer he needed merchandise
Convinced customer he could afford merchandise
Convinced customer his selection was wise

- Used customer's own objections to heighten interest
- Clarified objections
- Translated objections into reasons
- Used objections to clinch a sale
- Used objections to establish customer confidence

COMMENTS:

Agricultural Sales and Service
(Information Sheet continued)

Check Sheet -- Closing the Sale

	Did so effectively	Did so partially	Did not	Could have
1. NARROWED THE CHOICE				
a. Listened to customer's comments				
b. Compared items				
c. Eliminated rejected items				
d. Removed unwanted items				
e. Used testimonials				
2. ESTABLISHED A CHOICE				
a. Asked for customer agreement				
b. Used power of words as which, let's, etc.				
c. Suggested or assumed a decision				
d. Presented favorable alternatives				
e. Used terms or special services as an inducement				
3. KNEW WHEN CUSTOMER WAS READY TO BUY				
a. By facial expressions				
b. By positive interested actions				
c. By indirect agreement				
d. By weak objections				
e. By customer's question				
4. ASKED FOR ACTION				
a. Concentrated on item being sold				
b. Restated either part or all of the selling points				
c. Stressed benefits				
d. Asked a direct statement to secure action				
e. Asked for the sale				

Material for this Information Sheet was taken from Let's Analyze and Sell.

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

- UNIT:** Business Procedures
- TOPIC:** Importance of Accurate Records
- OBJECTIVE:** To develop an understanding of the necessity for accurate business records.
- REFERENCES:** Required:
1. Information Sheet , 920-III-1
- Supplemental:
2. Merchandising Products Used in the Farm Business,
Ohio State University, Columbus, Ohio 43210
- QUESTIONS**
or
ACTIVITIES:
1. a. Give five reasons why management must have records.
b. Which of the five is most important? Why?
 2. What does an "operating statement" show?
 3. How does a "balance sheet" differ from an "operating statement"?
 4. Where does management get the "figure" for the operating statement and balance sheet?
 5. Why are cash registers balanced daily?
 6. Why are "merchandise purchases" not the total cost of the merchandise sold?
 7. What are two good reasons for having periodic records of "stocks and inventories"?
 8. If the firm in the "statement of operations" had received \$1000 less during this year for storage and handling (with all entries being the same), what would have been the gross margin?

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Information Sheet
on
IMPORTANCE OF ACCURATE RECORDS

Most people are familiar with the sales ticket and some of the other ordinary papers used in conducting business. These papers and procedures are so important in helping to make an operation successful that they need considerable attention.

To understand the importance of these items, an overview of the entire records of a business is necessary. Management of a business, to be successful, needs records of the business as a whole, and of each department, in order to:

1. Know the financial picture of the business at any given time.
2. Give proper information to board of directors, stockholders, and others involved.
3. Satisfy legal requirements.
4. Plan desirable changes in management and procedures.
5. Prepare state and federal tax returns.

One record needed by management is an "operating statement." It is sometimes called a "statement of operations" or a "profit and loss statement." These are prepared either annually, biennially, quarterly, or monthly, whichever is desired. The operating statement summarizes the receipts and expenses for a given period of time and shows the profit or loss for that period. Many businesses have this statement broken down by departments in order to ascertain the profit or loss of each department.

The other standard overall record used by businesses is the "balance sheet". The balance shows the financial condition of the business at a given time, but generally on the last day of the period covered by the operating statement. The balance sheet lists the assets, liabilities, and net worth of the business. The liabilities and net worth show the methods of obtaining capital for the business. The sum of the liabilities and net worth must "balance" with the assets of the business at any given time.

The balance sheet and the operating statement make up the financial report for a business. (Note attached sample forms.)

Importance of Accurate Records
(Information Sheet continued)

The daily, weekly and monthly records all help contribute to the final make-up of the "balance sheet" and "operating statement".

A record of "cash sales" for the period desired (day, week, month, or quarter) must be secured. In addition, the cash register must be balanced daily to be sure that all cash is accounted for and that all records are correct.

"Charge sales" must be correctly made and entered in appropriate ledgers, according to the policies of the particular business.

Records must be made of all "merchandise purchases," including the cost of transportation and other incidental expenses.

Periodic records of "stocks and inventories" must be made, both for knowing the business' financial condition, and also for determining stock needs and sales.

In addition to those items directly concerned with sales, the costs of payroll, property expense taxes, supplies, services, advertising, interest, depreciation, losses and legal costs must be paid before any profit is returned to the business.

Importance of Accurate Records
(Information Sheet continued)

SAMPLE BALANCE SHEET, DECEMBER 31, 1965
ASSETS

CURRENT ASSETS:

Cash on hand and in bank.....	\$ 23,173.70	
Accounts Receivable -- Patrons \$ 26,060.54		
Less Allowance for Doubtful		
Accounts	<u>2,302.20</u>	23,758.34
Accounts Receivable -- Grain		
Firms		3,787.41
Inventories		42,016.76
Prepaid Items.....		<u>6,319.38</u>
Total Current Assets		\$104,055.59

INVESTMENTS:

Stock, Bonds, and Credits in Other Companies.....	\$ 10,667.15
---	--------------

PLANT AND EQUIPMENT:

	Cost	Accumulated Depreciation	Net
Land	\$ 2,326.39	\$.....	\$ 2,326.39
Buildings	245,749.02	87,007.97	158,741.05
Machinery and Equipment	73,488.70	39,452.33	34,036.37
Furniture and Fixtures	<u>4,538.78</u>	<u>3,921.09</u>	<u>617.69</u>
Total	<u>\$326,102.89</u>	<u>\$130,381.39</u>	<u>\$195,721.50</u>

Total Plant and Equipment --

Net.....	<u>\$195,721.50</u>
----------	---------------------

TOTAL ASSETS	<u>\$310,444.24</u>
--------------------	---------------------

LIABILITIES

CURRENT LIABILITIES:

Accounts Payable -- Trade and	
Others	\$ 15,649.42
Federal Income Tax Payable	254.64
Dividends Payable on Capital	
Stock	2,272.00
Patronage Refunds Payable for	
Year 1964	21,624.51

Importance of Accurate Records
(Information Sheet continued)

**SAMPLE STATEMENT OF OPERATIONS
FOR YEAR ENDED DECEMBER 31, 1965**

SALES	\$1,562,702.44
Less Cost of Commodities Sold.....	<u>1,478,914.33</u>
Gross Selling Margin.....	\$ 83,788.41

OTHER REVENUE

Grinding, Cleaning, etc.....	\$ 8,701.31
Storage and Handling.....	10,893.03
Dividends, Patronage Refunds, etc.....	<u>665.41</u>

Total.....	\$ <u>20,259.75</u>
------------	---------------------

GROSS MARGIN.....	\$ 104,048.16
-------------------	---------------

EXPENSES

Salaries and Wages.....	\$40,247.18
Heat, Power and Water.....	4,597.79
Plant Repairs and Maintenance.....	3,737.88
Insurance.....	3,942.74
Interest.....	31.70
Telephone.....	728.43
Taxes.....	7,417.40
Advertising.....	1,787.00
Depreciation.....	12,116.40
All Other Expenses.....	<u>3,710.15</u>

Total.....	\$ <u>78,316.67</u>
------------	---------------------

NET MARGIN.....	\$ 25,731.49
-----------------	--------------

DISTRIBUTION OF NET MARGIN

Provision for Dividend on Capital Stock-- \$	
4%.....	2,272.00
Patronage Refund to Stockholders--	
2 and 1 1/2%.....	21,680.17
Provision for Federal Income Tax.....	254.64
Balance of Net Margin Retained.....	<u>1,524.68</u>

Total	\$25,731.49
-------	-------------

Importance of Accurate Records
(Information Sheet continued)

Employees' Taxes Withheld	\$ 554.72
Accrued Salaries, Property and Pay- roll Taxes	<u>8,522.75</u>
Total Current Liabilities	\$ 48,878.04

STOCKHOLDERS' EQUITY:

Capital Stock Authorized, 750 shares	
Par Value \$100.00, 641 1/2	
Shares Issued Including 73 1/2	
Shares of Treasury Stock Out- standing. 568 Shares	\$ 56,800.00
Additional Paid-In Capital	4,132.00
Retained Earnings	<u>200,634.20</u>
Total Stockholders' Equity	<u>\$261,566.20</u>

**TOTAL LIABILITIES AND STOCKHOLDERS'
EQUITY** \$310,444.24

Material for this Information Sheet was taken from: "Business Procedures",
Module 6, Agricultural Supply, Sales and Service Occupations. The Center
for Research and Leadership Development in Vocational and Technical Ed-
ucation. 980 Kennear Road, Columbus, Ohio 43212

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Sales Tickets

OBJECTIVE: To develop an understanding of the necessity for completeness and accuracy in sales tickets and skill in their completion.

REFERENCES: Required:

Information Sheet, 920-III-2

QUESTIONS
or
ACTIVITIES:

1. Secure 10 sales tickets of the type or types used in the place of business in which you are employed

Attach the first to a sheet of paper, and letter each part of the ticket in a manner similar to the sample in Information Sheet, 920-III-2. Letter the parts in the order in which you would fill out the ticket. Then, on another sheet of paper, give the reason or the use for each part represented by a letter.
2. In making change, the salesman uses the _____ denomination, of bills and coins possible.
3. A numerical file accounts for _____ sales tickets.
4. A record of the customers' business is provided by sales tickets in the _____ file.
5. Completely make out 9 sales tickets with at least 5 items each without repeating the same item,

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Information Sheet
on
SALES TICKETS

The heart of the accounting system is the billing of merchandise to customers. This is necessary to provide accurate records of transactions. Many businesses have triplicate sales tickets, one for the customer and two for the office files. Sales tickets need to be numbered consecutively in advance for filing and checking purposes and to avoid loss of merchandise through carelessness. Sales tickets will provide the company with the following:

1. Information necessary to make an analysis of the day's business.
 - a. Amount of cash taken in. This also serves as a check on the cash that should be in the cash register at the close of the day's business.
 - b. The amount of merchandise sold
 - c. The amount of sales tax collected
2. Information needed for the accounts receivable ledger for the customers who charged their purchases
3. A record of each transaction for future reference. After the information contained on the sales ticket has been recorded in the proper journals, the two copies should be filed as follows:
 - a. One in a numerical file. Since all sales tickets are accounted for in this file, a sales person cannot accept cash from a customer, prepare a sales ticket, give the customer his copy, destroy the office copies and keep the money.
 - b. One in a client file. This will serve as a record of the customers' business.

Many factors are important in the preparation of the sales ticket:

1. In spite of the importance of sales tickets, many mistakes are made in their use. Some common mistakes are as follows:

Sales Tickets
(Information Sheet continued)

(Use examples to show how important common mistakes are to the net profit of a business, e g , how much more is needed in sales to make up for an order for a ton of feed not filled)

- a The ticket cannot be read
 - b Some merchandise is not billed when sold
 - c Price list and discount policies are not followed
 - d Mistakes in arithmetic
 - e Employees do not keep all of their sales tickets
2. Although each business will have its own procedure for completing sales tickets, the following shows one procedure to follow in making out a sales ticket correctly: (A sample sales ticket is included)
- a Enter the correct date
 - b Write the customer's correct name and address. If a partnership, it should be noted. The name and address becomes absolutely necessary if the purchase is charged.
 - c Give a complete description of each article sold. Quantity and unit should be thought of as one item (for example, 100 lbs. of fertilizer or 10 gals. of insecticide). The description should clearly designate the type of merchandise being sold, and not merely be a commodity classification. For example, 100# calf manna, not 100# feed. (On sales tickets, pounds are usually indicated by #) This is necessary for checking price and for inventory controls. Show the price per unit for all merchandise. (Some sales tickets will have a column heading marked "price".) Bill all merchandise at the retail price. If the customer is entitled to a discount because of volume, damage, etc., this amount is deducted from the retail price. Extensions must be mathematically accurate and legibly written
 - d Make a sub-total of the extension.

Sales Tickets
(Information Sheet continued)

- e. Calculate the sales tax on all taxable items, and enter under the first total. (Sales tax policies will vary according to state laws.)
- f. Next, calculate any delivery, mixing, grinding, or shelling charges, and enter under the sales tax calculations.
- g. Add the extension column to obtain the grand total of charges for the sale.
- h. Check the block on the ticket to indicate the method of payment (cash, check, charge, returned, account).
- i. If settlement is to be made by a check larger than the ticket total, it is necessary to note both the amount of the check on the face of the sales ticket, and the change to be given. A similar calculation is recommended when a large bill is given in payment.
- j. Get the signature of the person receiving the merchandise when the settlement is other than cash.
- k. When a customer pays on account, make out a sales ticket and mark the items for which he is paying (for example, fertilizer, feed, balance on note, etc.).
- l. In all cases where an employee ruins a ticket for any reason, the word "void" should be written across the front of the ticket, and the original placed with the other tickets. Sales tickets must be numbered consecutively. Each ticket must be accounted for at the end of the day's business.
- m. The salesman initials the ticket in the appropriate block.

Properly prepared sales tickets giving full information about the transaction provide the manager with the information he needs in conducting the business. Sales tickets may prevent many misunderstandings with customers when a transaction is questioned.

Sales Tickets
Information Sheet continued)

SAMPLE FARM SUPPLY COMPANY
Farmerton, Texas

Sold To John Jones & Sons January 14 19 64 — a
Address Farmerton, Texas — b

Quantity	Description	Price	Amount	
200	100# Bags 32% Beefmaster	5.75	1150 00	c
	less 5% qty. discount		57 50	c
			<u>1092 50</u>	d
1000#	Grinding	.15	150 00	f
1	Corn paper	3.25	3 25	
	Sales Tax		10 —	e
			<u>1245 85</u>	g
	Check #1250.00			
	Paid 1245.85			
	Change \$ 4.15			

☐ Eligible ☐ Ineligible

Patronage Volume

Received By: John Jones Salesman: Brown — m

Cash	Check	Charge	Returned	Account
	✓			

No. 47861

Sales Tickets
(Information Sheet continued)

Making change following a purchase can be done accurately by using the following procedure:

1. Count from the cost of the purchase to the total amount of payment. For example, if the cost is \$2.98 and a \$5 bill is tendered, count "\$2.99, \$3.00, \$4.00, \$5.00."
2. Use the largest denomination of coins and bills possible in making change.
3. Positively identify the amount (e. g. \$5, \$10, etc.) of a bill or check and lay it on top of the cash drawer until after the change is given in order to avoid mistakes.
4. If in doubt as to the correct change, or if payment is by check, the computation should be made with pencil and paper.
5. Use a flannel board and proportionately enlarged coins and bills to bring the class into a discussion and demonstration on the change-making process.

Material for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennear Road, Columbus, Ohio 43212

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Credit

OBJECTIVE: To develop an understanding of the need for and function of agricultural credit and the function of the agricultural business in supplying credit.

REFERENCES: Required:

1. Information Sheet, 920-III-3
2. How to Use Your Bank, L-389, Texas Agricultural Extension Service
3. Profitable Farm Management, Hamilton, J. E. W. R. Bryant, Prentice-Hall Inc., Englewood Cliffs, N. J., pp. 99-115, (State Adopted Text.)

QUESTIONS
or
ACTIVITIES:

1. Give 7 sources of credit for farmers.
2. What is the difference between "Productive Credit" and "Consumptive Credit"?
3. What does the business extending credit need to know about a credit customer? (The business firm is the "lender"; the customer, the "borrower".)
4. What are three advantages of the use of checks in paying bills?
5. Give 5 good rules in check writing.
6. Assume that a customer has requested that you write a check for his signature in the amount of his bill, \$127.65. Obtain a blank check and write it out, leaving the signature space blank. Attach it to the sheet you are using to answer these questions.

UNIT: Business Procedures
TOPIC: Credit
(Assignment Sheet continued)

7. How does a draft differ from a check?
8. What is a "note"?
9. What is a "mortgage"?
10. If your firm has a written credit policy, secure a copy and attach it in your notes.

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Information Sheet
on
CREDIT

The capital required to finance modern farming operations is so great that most farmers must either borrow money to pay for their purchases, or charge their purchases, making use of credit plans made available by businesses.

Credit is a very useful tool in conducting business. A vast majority of business done anywhere in the world proceeds with little transfer of actual cash. The retailer buys from the wholesaler or the distributor on credit just as the farmer buys on credit from the farm supply store.

Credit may be extended for only a short time (30 days or less, the same as cash) in which case the business establishment may do the financing. Credit may be extended for several months or longer, in which case a credit institution such as a bank or loan association will usually finance the purchase. Large amounts are secured by credit instruments such as commodity notes and mortgages.

Each business will establish credit policies. These policies will state the conditions under which credit will be extended, the maximum credit to be allowed, and the payment plans and penalties.

Material for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennear Road, Columbus, Ohio 43212

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Determining Selling Price

OBJECTIVE: To develop an understanding of the factors that enter into the determination of the selling price of merchandise.

REFERENCE: Required:

Information Sheet, 920-III-4

QUESTIONS
or
ACTIVITIES:

1. What must the selling price of an article include besides the original cost?
2. Which 5 of the "overhead" cost items listed in the information sheet will remain almost the same from year to year?
3. Which three of the overhead items will fluctuate most widely?
4. When overhead costs vary little or not at all, what are they called?
5. Why is an increase in volume of business usually advantageous to the firm?
6. What is "markup"?
7. A merchant buys an item delivered to his store for \$10.00. He prices it at \$13.00.
 - a. What is the markup?
 - b. What is the percent markup?
8. What is gross margin? How does it differ from markup?
9. An item costing \$10.00 is marked up to \$13.00 and sold. What is the gross margin?

UNIT: Business Procedures
TOPIC: Determining Selling Price
(Assignment Sheet continued)

10. Give a "rule of thumb" for determining a necessary gross margin.
11. What are feed "turn over" goals higher than hardware?

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Information Sheet
on
DETERMINING SELLING PRICE

The original cost of merchandise is the actual purchase price, including the cost of transportation. The selling price must include the original cost plus merchandising costs, overhead costs, and a reasonable profit.

The overhead costs may reflect some, or all, of the following conditions:

1. Merchandise may become obsolete before sold.
2. Merchandise becomes shop-worn.
3. Some merchandise will be overstocked and will not sell.
4. The price of merchandise may drop before the stock is sold.
5. Interest on investment in inventory items.
6. Insurance on inventory items.
7. The cost of warehousing the merchandise
8. Delivery costs (to the customer)
9. Taxes on the merchandise carried in inventory
10. Theft of merchandise
11. Shrinkage of merchandise
12. Damage to merchandise in stock
13. Wages and salaries
14. Office and accounting expenses

Overhead costs may be grouped into areas of fixed costs (insurance, interest, taxes, etc.) which will be constant per \$1,000 of inventory, and variable costs (raw materials, product containers, packaging materials, etc.) which change according to volume of business done, and the expenses of doing this business.

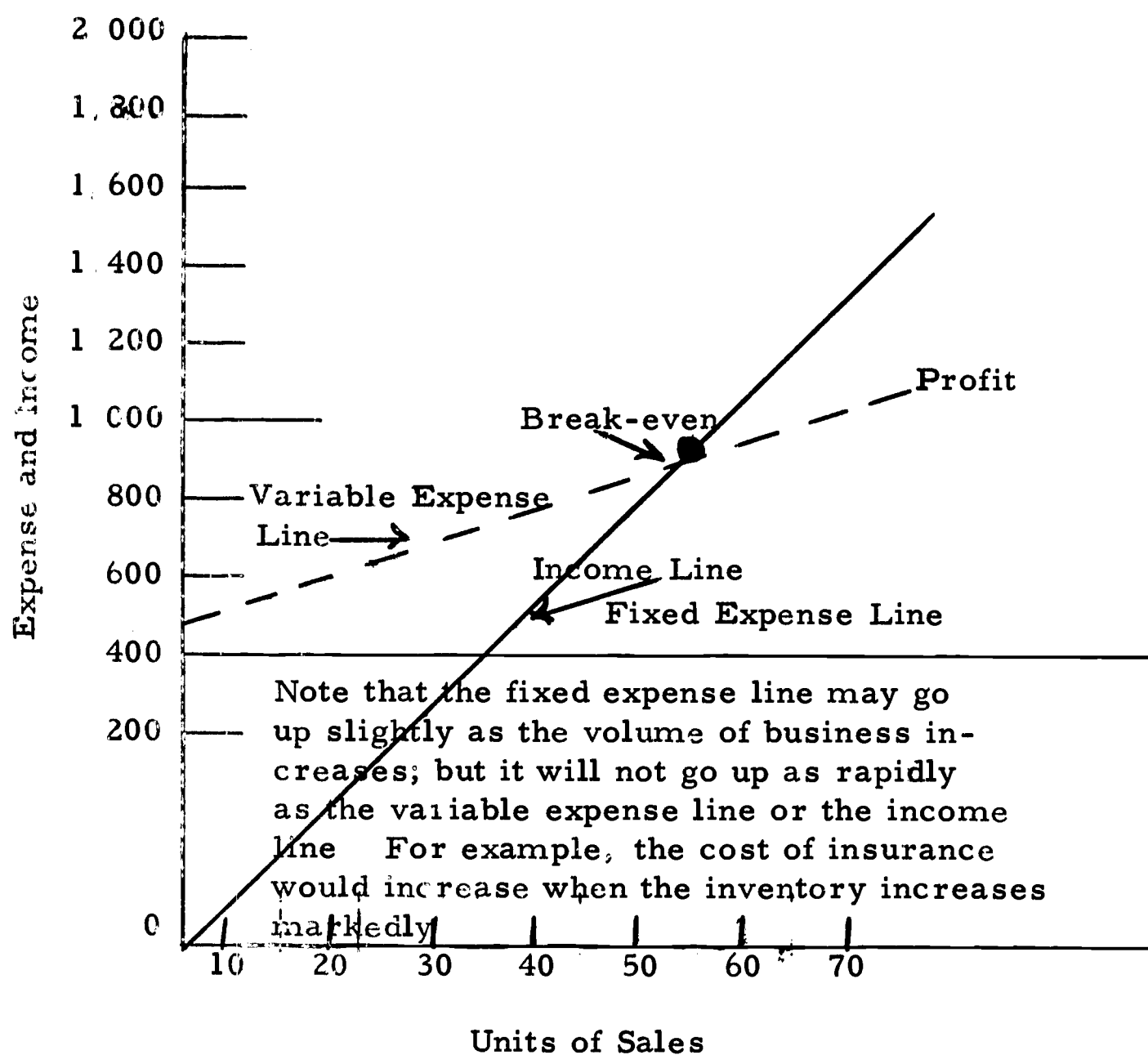
Determining Selling Price (Information Sheet continued)

Some companies may find the annual cost of keeping items in stock as low as 10% of value while other companies may need an increase in cost of 15% or more in order to pay the expense of just keeping stock on hand.

In addition to overhead costs, some companies may provide free services to their customers. Services like mixing or spreading fertilizers will also increase the costs of doing business.

A graph may help explain the need for increasing the volume of business in order to cover both fixed and variable expenses and make a profit;

BREAK-EVEN CHART



Determining Selling Price (Information Sheet continued)

The merchant must determine a selling price for his products that is high enough to cover the cost of the item, overhead expenses, service costs, and allow a reasonable profit.

There are two terms used to describe the difference between the merchant's cost of an item and his selling price.

1. "Markup" - The amount added to the cost to make the selling price. As a percentage, it is the relation of the amount of markup to the cost. For example,

$$\begin{array}{rcl} \text{Cost} & \text{Markup} & \text{Selling Price} \\ 20 & + \ 5 & = \ \$25 \\ \text{The markup is } 25\% & \text{of the cost.} & \end{array}$$

Example: Merchant purchases vegetable dust \$1.00
 Merchant prices vegetable dust at 1.25
 Cash markup.25
 Percent markup.

$$\frac{\text{Cash markup}}{\text{Purchase price}} = \frac{.25}{1.25} = 25\%$$

2. "Gross margin" - Is determined by dividing the markup by the selling price.

Example: Merchant purchases vegetable dust
 from wholesaler for. \$1.00
 Merchant prices vegetable dust at 1.25
 Cash markup.25
 Percent gross margin

$$\frac{\text{Cash markup}}{\text{Selling price}} = \frac{.25}{1.25} = 20\%$$

Markup and gross margin are often confused. They are always the same in dollars and cents; but never the same in percentage because markup is figured on cost and margin on selling price.

Examples of the gross margins and markups used by one farm supply business to cover their expenses and to secure a reasonable profit is as follows:

Determining Selling Price
(Information Sheet continued)

	<u>Percent Gross Margin</u>	<u>Percent Markup</u>
Fertilizer	12.0 %	13.6%
Grain	6.0 %	6.4%
Hardware	33.3 %	50.0%
Commercial Feed	18.0%	22.0%

A rule of thumb that may be used to determine gross margin is as follows: in order to make a large enough profit to remain in business, the number of times an item turns over in stock during the year times the gross margin should equal 100.

Example: Refer to the vegetable dust used in the illustration for markup and gross margin.

Vegetable dust turnover 5 times in stock during the year.

$$\begin{aligned}
 5 \times X (\text{gross margin}) &= 100 \\
 5X &= 100 \\
 X &= 20\% \text{ gross margin}
 \end{aligned}$$

The suggested turnover goals for one business are as follows:

Feed 15	Seed 8-10	Farm equipment 3
Fence 4	Oil & grease 4	Building material 4
Paint 4	Tires & tubes 4	Electrical merchandise 4
Hardware 3	Miscellaneous merchandise 4	Farm supplies, general 4
Machinery 4		

Materials for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennear Road, Columbus, Ohio 43212

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920-III-5

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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Business Records: Ordering and Receiving Merchandise

OBJECTIVE: To secure an understanding of business forms used in ordering and receiving merchandise.

REFERENCES: Required:

1. Information Sheet, 920-III-5.

Supplemental:

1. Stockkeeping, Division of Extension, The University of Texas, Austin, Texas

QUESTIONS
or
ACTIVITIES:

1. Explain to the best of your knowledge who makes the decisions regarding what merchandise and how much to purchase in the business in which you work.
2. Secure a "purchase order" if one is available where you work and write up a sample order.
3. Why is it necessary to keep copies of purchase orders?
4. What is usually included in a "receiving record"?
5. Give two ways freight charges are handled.
6. What is a "bill of lading"?
7. What is an "invoice"?
8. How are invoices checked by business firms?
9. Explain the forms used for ordering and receiving goods in the business in which you work.

Texas Education Agency
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Information Sheet
on
BUSINESS RECORDS: ORDERING AND RECEIVING MERCHANDISE

In purchasing and receiving merchandise in a business, the following are typical procedures and business forms used:

1. A decision is made on the type, amount, and cost of merchandise to be ordered, and the company from which it is to be ordered.
2. A purchase order is completed.
3. Company policy usually assigns the responsibility in ordering merchandise to specific employees. Duplicate records or purchase orders are kept in order to check them against the materials, the invoice, and bill of lading when merchandise is received. Note specifically on the sample purchase order the complete items, including the company's order number.
4. When the shipment is received, a "receiving record" or "receiving report" are typical forms used to record the receipt of merchandise. Other similar records may be used.
5. The receiving record must be a complete record of the merchandise received, including its condition when received. The primary use of a receiving record is to check incoming merchandise against invoices and bills of lading.
6. Commercial carriers, such as railroads and trucking companies, will charge for hauling the products from the originating point to the delivery point. Prior to placing the order, an agreement should be made on who pays the delivery charges, the shipper or the receiver. Freight may be prepaid or sent C. O. D.
7. Forms used by the carriers are called "bills of lading" or "shipping records". An employee should know how to receive merchandise. He should understand the forms used.
8. The final business form to be considered in the ordering and receipt of merchandise is the "invoice". An invoice is a bill or statement due a company for merchandise delivered. Since

Business Records: Ordering and Receiving Merchandise
(Information Sheet continued)

the payment for goods is made from the invoice, it must be accurate. The invoice should be checked against all previous papers--the purchase order, the receiving record, and the bill of lading. All businesses have an established policy as to the checking of invoices for payment. The discount terms must appear on the invoice and be used in computing the amount to be paid.

Material for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennear Road, Columbus, Ohio 43212

Agricultural Education
Teaching Materials Center
College Station, Texas

920-III-6

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

- UNIT:** Business Procedures
- TOPIC:** Inventories
- OBJECTIVE:** To develop an understanding of principles and practices used in maintaining and utilizing inventories.
- REFERENCES:** Required:
1. Information Sheet, 920-III-6
- Supplemental:
2. Stockkeeping, Division of Extension, University of Texas, Austin, Texas
- QUESTIONS**
or
ACTIVITIES:
1. What is an inventory?
 2. Why are inventories necessary?
 3. What is meant by "inventory control"?
 4. What is a perpetual inventory?
 5. When are "physical inventories" made?
 6. In addition to counting the items, what purposes are met by a physical inventory?
 7. What four items of additional information will most inventories secure?
 8. If a form (or forms) is used for making inventories in the business in which you work, secure a form, study it and attach it with your answers.

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Teaching Materials Center
College Station, Texas

920-III-6

Texas Education Agency
Texas A&M University
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Information Sheet
on
INVENTORIES

An inventory is a correct count of a concern's merchandise, including its value. An inventory is necessary for several reasons:

1. An accurate account of value is necessary year-end or periodic analysis of the business.
2. Periodic merchandise counts enable the business to determine the freshness of its stocks, and to decide whether some items are obsolete.
3. Inventory counts will show the extent to which items are moving. They will show whether items are overstocked or understocked.
4. Physical count inventories are necessary to determine possible losses. (These are different than book inventories.)

Businesses will use inventories in additional ways. "Inventory control" is a system of keeping on hand adequate amounts of any given merchandise. A business needs to be sure that the customers' needs are met, but does not want to have surplus, outdated merchandise on hand which frequently may be in poor condition.

There are several types of inventories:

1. Perpetual inventories

Many businesses have some or all of their stock listed so that they know at any given time the number of items of merchandise on hand. This is done by systematically adding the purchases to the inventory, and by subtracting the sales taken from the daily sales slips or totals which are then subtracted from these inventories. This results in maintaining a "book" inventory level as purchases and sales are made. To be sure it is correct, periodic physical counts must be made and checked against the perpetual inventory.

Inventories
(Information Sheet continued)

2. Physical inventory

The physical inventory is an actual count of all merchandise on hand at a given time. This must be done at the end of the fiscal year, and is of considerable value at other times during the year. Procedures in making the count will vary but will include many or all of the following procedures:

- a. Arrange stock in an orderly fashion.
- b. Check stock for condition; count only that which is salable.
- c. Count and record every item, listing the cost price unless the particular business prefers that the selling price be used.
- d. Keep inventories separate for different departments and types of goods.
- e. Compute totals.

Businesses will have special forms used for taking the inventory. These forms may include:

1. Location of merchandise
2. Department to which merchandise is charged
3. Names of persons taking the inventory
4. Information concerning the age and/or quality of merchandise

Materials for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennear Road, Columbus, Ohio 43212

Agricultural Education
Teaching Materials Center
College Station, Texas

920-III-7

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Receiving and Storing Merchandise

OBJECTIVE: To develop an understanding of the steps involved in receiving and storing merchandise.

REFERENCES: Required:

1. Information Sheet, 920-III-7

Supplemental:

2. Stockkeeping, The Division of Extension, The University of Texas, Austin, Texas

QUESTIONS
or
ACTIVITIES:

1. When should damage be noted when unloading merchandise upon its receipt?
2. How should damage be noted?
3. How are "shortages" checked?
4. When should the quality of merchandise be checked?
5. Secure one of the receiving forms used in the firm in which you work and attach it to this assignment.

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College Station, Texas

920-III-7

Texas Education Agency
Texas A&M University
(cooperating)

Information Sheet
on
RECEIVING AND STORING MERCHANDISE

One of the important functions of any agricultural business is the receipt and storing of merchandise. To properly receive merchandise, whether it be feed, fertilizer, chemicals or miscellaneous merchandise, several steps must be followed:

1. A definite plan must be used in unloading, moving, and storing items. This involves consideration of who does the work, how various types of merchandise must be handled (by hand, fork lift, etc.), and how and where it is to be stored.
2. Damage or breakage must be determined as the unloading proceeds. Both damage and breakage must be noted on the receiving form. Damaged merchandise must be destroyed, returned, or kept and sold at a reduced price. The person in charge should determine, at the time of unloading, whether there is any shortage.
3. The possibility of shortage must always be checked by exact count or weight at the time of receiving the merchandise. The quantity of goods received must always agree with the goods signed for on the bill of lading, or other shipment record.
4. Policies vary on checking goods against the invoice to check against substitutions. Invoices may be with the goods or they may arrive before the goods. The person checking the shipment should be sure that the merchandise received is in accord with the purchase order before signing the delivery slip. Many businesses will use a duplicate copy of their purchase order to check against merchandise received.
5. The quality of the merchandise, insofar as it can be determined by visual examination or by approved testing procedures, should be checked at the time of arrival. Quality must be checked against what was ordered to be sure it meets the standards specified in the order.
6. The employee who receives the merchandise will usually sign for it. He will also complete a receiving report for his business. Note on the receiving report form the fact that accurate count, condition of merchandise, description of merchandise as well as other pertinent facts, are listed.

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Texas Education Agency
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920-III-8

Assignment Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Stocking and Merchandise Planning

OBJECTIVE: To develop an understanding of the importance of and methods used in properly stocking and in merchandise planning.

REFERENCE: Required:

Information Sheet, 920-III-8

QUESTIONS
or
ACTIVITIES:

1. In your opinion, how should a merchant determine how much of a particular product to stock?
2. What are the penalties for a merchant ordering merchandise
 - a. too early ?
 - b. too late?
3. Who should call attention to low stocks in a firm?
4. Name three items in the store or place of business where you work that have slow "turnover".
5. Name three items in the store in which you work that have rapid "turnover".
6. What is the reason for the difference in Nos. 4 and 5 above?
7. Draw a diagram of the place of business in which you work, drawing in the location of classes of merchandise.

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920-III-8

Texas Education Agency
Texas A&M University
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Information Sheet
on
STOCKING AND MERCHANDISE PLANNING

Businesses have numerous decisions to make in determining the quantity of any certain item to order. The quality of stock and time to order are also important. Some factors which businesses must keep in mind in ordering supplies are:

1. Will this merchandise have a slow or fast turnover?
2. Will it keep if some remains unsold?
3. What will be the probable demand for this product this year or this season?
4. When will the demand come?
5. How long will it take to get replacement merchandise?
6. How much money may we have tied up in inventory stock?
7. Where can we secure quality merchandise at the lowest cost?

Although only certain employees will have the responsibility of ordering stock, all employees must be responsible for calling attention to low stocks and for keeping the stock neat and orderly.

An employee should know the exact location of merchandise. He should have a good working knowledge of the amount of a product on hand at a given time in relation to the probable demand.

Material for this Information Sheet was taken from: "Business Procedures", Module 6, Agricultural Supply, Sales and Service Occupations. The Center for Research and Leadership Development in Vocational and Technical Education, 980 Kennebec Road, Columbus, Ohio 43212.

Agricultural Education
Teaching Materials Center
College Station, Texas

925-IV-1

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizers

TOPIC: Importance of Fertilizers in Modern Farming

OBJECTIVE: To develop an understanding of the importance of fertilizers in modern farming.

INTRODUCTION: The farmer who consistently produces high crop yields usually provides plenty of plant nutrients for the crops he is trying to produce. Soil fertility is one of the greatest factors in high yields. It is just as important to keep a plant fed as it is the case with animals. Some soils are naturally fertile or productive and others will not produce plants profitably without being aided by the application of fertilizers or other soil amendments. No matter how poor a soil is, its productivity can be increased by the addition of water, organic matter, soil amendments, and/or fertilizers.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 13, 212-215.
2. Managing Southern Soils, Vanderford, pp. 217-218.
3. Using Commercial Fertilizer, McVickar, pp. 13-16.
4. Our Land and its Care, National Plant Food Institute, Washington D. C. pp. 20, 42-43.

QUESTIONS
OR
ACTIVITIES:

1. What are the three major advantages of fertilizing crops?
2. In what way do plants resemble animals?

UNIT: Introduction to Fertilizers

TOPIC: Importance of Fertilizers in Modern Farming
(Assignment Sheet continued)

3. From what three sources do plants get their food?
4. In what three ways is plant food lost from the soil?
5. What four major factors influence the use of fertilizer?
6. What has been the increase in fertilizer use in Texas from 1945 to 1964?
7. What amount was expended for fertilizers and lime in Texas in 1963?
8. Does a deficiency in one plant food limit crop yields?

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925-IV-2

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizer

TOPIC: What is Fertilizer?

OBJECTIVE: To develop an understanding of the meaning of the term "fertilizer".

INTRODUCTION: Growing plants, just like animals, must have food for growth and development if their yield is maintained at the proper level. This food for plants is made up of certain chemical elements. A full understanding of the components in various types of fertilizer will help the fertilizer sales and serviceman be of better service to the customers.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 63-108; 13-38.
2. Using Commercial Fertilizers, McVickar, pp. 13-16.

QUESTIONS
or
ACTIVITIES:

1. What is a fertilizer?
2. What is a plant nutrient?
3. Name the three most essential plant nutrients.
4. How many chemical elements are considered essential to plant growth?
5. Name ten of the above chemical elements.
6. Can all plant food elements be used in their elemental (most simple) form?

UNIT: Introduction to Fertilizers

TOPIC: What is Fertilizer?

(Assignment Sheet continued)

7. Why is the amount of plant food in a given weight of fertilizer only a portion of the total amount of fertilizer in that amount?
8. What are "straight" or fertilizer materials?
9. What is a "unit" of plant food?
10. What is a "complete" fertilizer?
11. What is a "mixed" fertilizer?
12. In what order is the percent of the three primary plant foods listed when speaking of fertilizers?

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925-IV-3

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizers

TOPIC: Forms of Fertilizers

OBJECTIVE: To develop an understanding of the various forms
in which fertilizers are handled, sold, or applied.

INTRODUCTION: To get the maximum returns from fertilizer, it must
be applied and used properly. The form in which it
is applied will determine the extent of its use by the
plants. A knowledge of these forms will help to use
the fertilizer at maximum advantage.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food
Institute, pp. 63-108.
2. Our Land and Its Care, National Plant Food
Institute, pp. 46-49.
3. What is Fertilizer? pamphlet, National Plant
Food Institute.

QUESTIONS
or
ACTIVITIES:

1. What three general forms are fertilizers produced?
2. Which liquid fertilizer turns to a gas in application?
3. What is a "suspension" type fertilizer?
4. What form of fertilizer is most commonly used?
5. What two forms does dry solid fertilizer come in?
6. What is an organic fertilizer?
7. Does animal manure have more value as fertilizer
or organic matter?

UNIT: Introduction to Fertilizers

TOPIC: Forms of Fertilizers

(Assignment Sheet continued)

8. Which nutrient is most commonly applied in the liquid form?
9. What is the chief value of foliar application of liquid form fertilizer?
10. What advantage is liquid form of fertilizer?

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925-IV-4

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizers

TOPIC: How Fertilizers are Made

OBJECTIVE: To develop an understanding of how fertilizers are made

INTRODUCTION: The manufacture of fertilizer in the United States has its beginning with the production of superphosphate from bones in a small plant in Baltimore in 1849. Today the manufacture of fertilizer is one of the largest units in the chemical industry. An understanding of the history and the other later developments in the making of fertilizers is very important.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 73-82.
2. Our Land and its Care, National Plant Food Institute, pp. 26-34; 50-53.
3. What is Fertilizer?, pamphlet, National Plant Food Institute

QUESTIONS
or
ACTIVITIES:

1. When was fertilizer manufacturing started in the United States and what nutrient was produced?
2. Of what nutrient do we have an almost inexhaustable supply on hand?
3. What is the basic "building material" for all nitrogen fertilizers?
4. Name five sources of nitrogen.
5. What are two organic sources of nitrogen?

UNIT: Introduction to Fertilizers
TOPIC: How Fertilizers are Made
(Assignment Sheet continued)

6. What is phosphate largely derived or made from?
7. Which state supplies most of phosphate rock?
8. What state furnishes the largest amounts of potash?
9. Which chemical potash material furnishes most of the potash fertilizer?
10. Where do we get most of our materials for secondary and micro nutrient fertilizers?
11. What development in recent years in fertilizer production was primarily for saving labor?



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925-V-1

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT: Soils and Soil Problems
- TOPIC: Taking and Using Soil Samples to Determine Fertilizer Needs.
- OBJECTIVE: To develop an understanding of the taking and using of soil samples to determine fertilizer needs
- INTRODUCTION: Each farm and many times each field presents an individual problem. People who strive for top yields and profit need as much specific information as they can secure. Chemical analysis of their own soils is the best starting point to find and correct soil problems.
- REFERENCES: Required:
1. The Fertilizer Handbook, National Plant Food Institute, pp. 84-92.
 2. Test Your Soil for Profit, Leaflet L-265, Texas Agricultural Extension Service.
- QUESTIONS
or
ACTIVITIES:
1. What is a soil test?
 2. What is included in a soil test?
 3. Give nine steps in taking a soil sample.
 4. Take a soil sample and send to the college or commercial soil testing laboratory for analysis.
 5. Encourage test demonstrations using soil test recommendations.

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925-V-2

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Soils and Soils Problems

TOPIC: Interpreting Soil Test Results

OBJECTIVE: To develop an understanding of how to interpret soil test results.

INTRODUCTION: Regardless of the careful taking of a soil sample and giving the proper information, a person must be able to read the results of a soil test, and report and interpret them properly, in order to make the maximum use of the money spent on fertilizer materials.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 84-92.

Supplemental:

2. Test Your Soil for Profit, Leaflet L-265, Texas Agricultural Extension Service.
3. Soil Testing-What is it?, TAES - TAP 376.

QUESTIONS

or

ACTIVITIES:

1. What information is given on a soil test result?
2. What does each item of information mean?
3. Does the expected yield influence soil test results?
4. What two soil test values are used together with other factors to determine need for limestone?
5. Does "plant nutrients needed per acre" mean pounds of fertilizer or pounds of actual plant food?

UNIT: Soils and Soils Problems
TOPIC: Interpreting Soil Test Results
(Assignment Sheet continued)

6. Why is pH level important to plants?
7. When is a soil acid, neutral and alkline?

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925-V-3

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT: Soils and Soil Problems
- TOPIC: The pH Range and its Relation to Crop Production
- OBJECTIVE: To develop an understanding of the pH range of soils and its relation to crop production.
- INTRODUCTION: One of the major soil characteristics that may determine whether a soil is satisfactory is the soil reaction or the pH range. This is the degree of acidity or "sourness" or alkalinity or "sweetness" of a soil. Most all plants will make better growth and production within a certain range of soil reaction or pH.
- REFERENCES: Required:
1. The Fertilizer Handbook, National Plant Food Institute, pp. 15-27.
 2. Our Land and its Care, National Plant Food Institute, pp. 18-19.
 3. Soil Reaction (pH) Ranges, L-164, Texas Agricultural Extension Service.
- QUESTIONS
or
ACTIVITIES:
1. What is pH range?
 2. How many divisions are on a pH scale?
 3. What pH ranges indicate acid or "sour" soils?
 4. What pH range is neutral?
 5. What pH range indicates alkaline or sweet soils?
 6. Why are soils in humid areas like the south either acid or sour?

UNIT: Soils and Soil Problems

TOPIC: The pH Range and its Relation to Crop Production

(Assignment Sheet continued)

7. Which general groups of plants are more sensitive to pH range?
8. Is the availability of plant nutrients altered by the pH range?
9. What soil amendment is used to reduce or increase pH range more than other amendments?
10. What pH range is most desirable for the following crops:
 - a. Corn
 - b. Cotton
 - c. Bermuda grass
 - d. Grain sorghum
 - e. Peaches

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925-V-4

Texas Education Agency
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Soil and Soil Problems

TOPIC: Liming of Soils

OBJECTIVE: To develop an understanding of the materials and the value of liming soils.

INTRODUCTION: Lime has many beneficial effects on soils that are acid or sour. Actually it acts as a regulator and a soil amendment. Agricultural lime functions to help the soil in several ways. A knowledge of these helps and how they can be utilized will greatly benefit in increased yields.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 18-27.
2. Managing Southern Soils, Vanderford, pp. 190-216.
3. Our Land and its Care, National Plant Food Institute, pp. 18-19; 253

QUESTIONS
or
ACTIVITIES:

1. What is the major treatment for acid soils?
2. What are the three major functions of lime? Explain each.
3. What is a liming material?
4. Name four sources of lime in the south?
5. Name six ways soils responds from liming.
6. What kind of soil is usually more acid or in need of lime?

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925-V-5

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Soils and Soil Problems

TOPIC: Correcting Alkaline and Saline Soils

OBJECTIVE: To develop an understanding of how to correct alkaline or saline soils.

INTRODUCTION: Alkalinity and the excess accumulation of soluble salts in the soil can create as serious a problem as acidity. This is particularly true in the irrigated areas of Texas. In these areas, management practices to prevent saline or alkali soil conditions are very important. A better understanding of how to deal with these two soil problems will increase yield and profits.

REFERENCES: Required:

1. The Fertilizer Handbook, National Plant Food Institute, pp. 27-38.
2. Know Your Fertilizers, MP-572, Texas Agricultural Extension Service.

QUESTIONS
or
ACTIVITIES:

1. What are two ways soluble salts affect a soil?
2. What are three categories in describing saline or alkali soils?
3. What causes soluble salts to occur in soils?
4. How does salinity affect plant growth?
5. What is the first requirement for reclamation of saline soils?
6. What is the distinguishing characteristic of alkali soils?

UNIT: Soils and Soil Problems
TOPIC: Correcting Alkaline and Saline Soils
(Assignment Sheet continued)

7. What is the usual method of reclaiming alkali soils?
8. What are three general groups of chemical amendments used to correct alkali soils?
9. What is the most accurate method of determining saline or alkaline problems?

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925-VI-1

Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT: Sources of Fertilizer Nutrients
- TOPIC: Nitrogen Fertilizers
- OBJECTIVE: To develop an understanding of nitrogen fertilizers
- INTRODUCTION: Nitrogen for fertilizers is derived or made from many sources and is available in various forms both organic and inorganic. It can be supplied as a liquid, solid, or gas, and is probably one of the most abundant of any of plant nutrients.
- REFERENCES: Required:
1. 'The Fertilizer Handbook,' 4th edition, National Plant Food Institute, pp. 73-78
 2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 26-27
 3. Know Your Fertilizers, MP-572, Texas Agricultural Extension Service
 4. Fertilizers and Their Use, B-167, Texas Agricultural Extension Service
- QUESTIONS
or
ACTIVITIES:
1. Does atmospheric nitrogen have to be combined with other elements, to be used by plants?
 2. What plants convert atmospheric nitrogen to an available form by the help of bacteria?
 3. Name 8 dry fertilizers that furnish a good source of nitrogen.
 4. What chemical is the starting point for most nitrogen fertilizers?

UNIT: Sources of Fertilizer Nutrients
TOPIC: Nitrogen Fertilizers
(Assignment Sheet continued)

5. What two nitrogen fertilizers are easily placed in irrigation water?
6. Name 3 sources of nitrogen other than a commercial fertilizer.
7. Which nitrogen moves with soil moisture; nitrate or ammonium form?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT: Sources of Fertilizer Nutrients
- TOPIC: Phosphorous Fertilizers
- OBJECTIVE: To develop an understanding of phosphorous fertilizers
- INTRODUCTION: The oldest commercial fertilizer production was in the field of phosphorous fertilizers. Most all phosphorous fertilizers are derived from raw rock phosphate and the extent to which it is processed, determines the types of fertilizers produced. Much of the phosphate rock comes from the state of Florida. More phosphate fertilizer is used by farmers than any other fertilizer.
- REFERENCES: Required:
1. "The Fertilizer Handbook," 4th edition, National Plant Food Institute, pp. 77-80
 2. Know Your Fertilizers, MP 572, Texas Agricultural Extension Service
 3. Fertilizers and Their Use, B 167, Texas Agricultural Extension Service
 4. Using Commercial Fertilizer, Mc VicKar, pp. 58-68
- QUESTIONS
or
ACTIVITIES:
1. What is the basic ingredient of most all phosphate fertilizers?
 2. Name 4 sources of phosphorous.
 3. Name 5 phosphate fertilizers.
 4. What phosphate fertilizer contains nitrogen?
 5. Does phosphate move very much in the soil from where it is placed?
 6. Which phosphorous fertilizer is a liquid?

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925-VI-3

Texas Education Agency
Texas A&M University
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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Sources of Fertilizers

TOPIC: Potash Fertilizers

OBJECTIVE: To develop an understanding of potash fertilizers

INTRODUCTION: Pure potassium will burst into flame when exposed to the air. Thus, like nitrogen, it must be combined with other elements before it can be used as a fertilizer. Most soils have rather large amounts of potash, but many are deficient. The states furnishing much of the potash materials for fertilizer are New Mexico, California and Utah.

REFERENCES: Required:

1. "The Fertilizer Handbook", 4th edition, National Plant Food Institute
2. Know Your Fertilizers, MP-572, Texas Agricultural Extension Service
3. Fertilizers and Their Use, B-167, Texas Agricultural Extension Service
4. Using Commercial Fertilizers, McVickar, pp. 69-76

**QUESTIONS
or
ACTIVITIES:**

1. What are the 3 compounds that furnish most of the potash?
2. What state produces most potash fertilizer material?
3. Name 3 other sources of potassium.
4. Does potassium remain where it is placed, or does it move in soils?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT:** Sources of Fertilizer Nutrients
- TOPIC:** Secondary and Trace Elements
- OBJECTIVE:** To develop an understanding of secondary and trace elements
- INTRODUCTION:** Although called secondary or trace elements, these elements, when in such deficiency as to cause retardation of plant growth and low yields, may become very important. As continued high yields are carried off of the land, the secondary and trace elements will become more and more a major soil problem.
- REFERENCES:** Required:
1. "The Fertilizer Handbook", 4th edition, National Plant Food Institute, pp. 41-52
 2. Our Land and Its Care, 4th edition, National Plant Food Institute
 3. Fertilizers and Their Use, B-167, Texas Agricultural Extension Service
 4. Know Your Fertilizers, MP-572, Texas Agricultural Extension Service
- QUESTIONS
or
ACTIVITIES:**
1. Name the 3 secondary plant nutrients.
 2. Name 7 trace or micro nutrients.
 3. Name the major sources of the 3 secondary nutrients.
 4. Name the compounds that will furnish the trace or micro nutrients.

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT:** Functions of Plant Food Elements
- TOPIC:** Functions of Primary Plant Foods
- OBJECTIVE:** To develop an understanding of the functions of primary plant foods.
- INTRODUCTION:** Out of the sixteen essential plant food nutrients, thirteen are derived from the soil and must enter the plant mostly from the roots. The primary plant foods are so-called because of the excessive amounts that a plant uses of these elements. The function of these elements is of great importance in providing the plant's needs.
- REFERENCES:** Required:
1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 39-41
 2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 26-31
- QUESTIONS**
or
ACTIVITIES:
1. Why are primary plant food elements so-called?
 2. Give the function of nitrogen.
 3. Give the function of phosphorous.
 4. Give the function of potash.

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Functions of Secondary Plant Foods

OBJECTIVE: To develop an understanding of the functions of the secondary plant foods.

INTRODUCTION: The secondary plant foods are so-called because they are used less extensively by plants. This does not, however, lessen the need for these elements in a balanced nutrient program for these plants and the knowledge of the function of these elements is vitally important for proper crop yields.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, page 41
2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 32-33

QUESTIONS

or

ACTIVITIES:

1. Why are secondary plant food nutrients so-named?
2. Name 3 secondary plant foods.
3. Give the functions of each secondary plant food.

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Functions of the Micro Nutrients

OBJECTIVE: To develop an understanding of the functions of the micro nutrients or trace elements.

INTRODUCTION: The micro nutrients are so-called because they are required in small quantities. The micro nutrients are adequate in some soils but sandy soils sometimes are deficient. Though they are micro nutrients, or trace elements, when a soil is deficient in any one micro nutrient, the plants still suffer and production is reduced. A knowledge of these elements is important to fertilizer users.

REFERENCES: Required:

The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 41-43

QUESTIONS

or

ACTIVITIES:

1. What are the micro nutrients commonly called?
2. Name the micro nutrients and give the functions of each.

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Assignment Sheet
for
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UNIT: Functions of Plant Food Elements

TOPIC: Nutrient Deficiency Signs in Plants

OBJECTIVE: To develop an understanding of nutrient deficiency signs in plants.

INTRODUCTION: Plants, like people and animals, need not only enough food, but they need a balanced diet, and when any one of the plant foods are deficient, the plant suffers, the yield is reduced, and profits are lost. A knowledge of the signs that plants indicate will help to correct deficiencies, maybe not on the present crop, but on future crop or plant production.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 43-52
2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 35-39

QUESTIONS
or
ACTIVITIES:

1. Name two general types of deficiencies that occur in plants. Define each.
2. Name the deficiency signs in crops for the 3 primary nutrients.
3. Name the deficiency signs for the secondary nutrients.

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Plant Growth and Nutrient Uptake

OBJECTIVE: To develop an understanding of plant growth and uptake of nutrients.

INTRODUCTION: An understanding of how plants grow and utilize their nutrients will help a person know how to deal with soil and plant problems. The study of the absorption and utilization of these nutrients are vital and definitely affect the fertility program of crops.

REFERENCES: Required:

1. Crop Production in The South, Klingman, pp. 13-35
2. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 57-58

QUESTIONS
or
ACTIVITIES:

1. Why is it important to understand how plants grow?
2. How are plants like people and animals?
3. What is photosynthesis?
4. What is food?
5. Name 3 food elements used for growth and energy.
6. What is diffusion?
7. What is respiration in plants? Where does it occur in a plant?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Primary Plant Foods

TOPIC: Plant Food Removed by Crops

OBJECTIVE: To develop an understanding of the loss of plant food from the soil by removing or harvesting crops.

INTRODUCTION: Every time a crop is harvested from the soil, it carries with it great quantities of plant food nutrients. This plant food must be replaced or the fertility of the soil is greatly depleted. The yield and the quality of future crops, as well as the profit, will suffer. It is important to understand the extent to which plant food is removed by certain crops, to be able to adequately maintain a good fertility level.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 52-55
2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 24-25

**QUESTIONS
or
ACTIVITIES:**

1. How much plant food must be returned each year, just to "hold your own" in soil fertility?
2. Why does more plant food need to be replaced than is actually carried off?
3. How much plant food, per acre, is carried off of the soil by a 150 bushel to the acre corn crop?
4. How much plant food, per acre, is carried off of the soil by a cotton crop 1500 lbs. of seed and lint?
5. How much plant food is contained in 1000 lbs. of fat cattle (live weight)?

UNIT: Functions of Plant Food Elements
TOPIC: Plant Growth and Nutrient Uptake
(Assignment Sheet continued)

8. Why is water absorption important to a plant?
9. What is the chief water absorbing part of the plant?
10. Name 3 ways water is lost from a plant.
11. How do the factors influencing rapid plant growth influence nutrient absorption by a plant?
12. The plant has a system of veins to move water, nutrients, and foods. What are they called?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT: Principles Involved in the Use of Fertilizers
- TOPIC: The Economic Principles of Fertilizer Use
- OBJECTIVE: To develop an understanding of the economic principles involved in the use of fertilizers.
- INTRODUCTION: High yields of a good quality crops are very essential for a successful farming program. Many times, the difference in profit and loss may depend upon adequate plant food applied correctly. The same principles of economic fertilizer use apply to the use of any item worth money, such as land, labor or chemicals. It will pay to add fertilizer as long as the cost of applying the fertilizer is lower than the added returns. An understanding of some of the factors of economics involved in the use of fertilizer will help to get more from your fertilizer dollar.
- REFERENCES: Required:
1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 133-137.
 2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 60-70.
 3. Using Commercial Fertilizers, McVickar, pp. 113-116.
- QUESTIONS
or
ACTIVITIES:
1. What three ways can the use of fertilizer result in greater profits?
 2. What percent of the production from major crops comes from fertilizer?
 3. Where does it pay to use fertilizer?
 4. Name five fixed costs of crop production?
 5. How are fixed costs of crop production and fertilizer costs related?

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Assignment Sheet
in
FERTILIZER SALES AND SERVICE

- UNIT: Principles Involved in the Use of Fertilizers
- TOPIC: Soil Factors that Affect the Response to Fertilizers
- OBJECTIVE: To develop an understanding of the soil factors that affect the response to fertilizer.
- INTRODUCTION: It is well known that various soil and soil conditions greatly influence the response to fertilizers. This is because of their chemical composition, which causes them to respond differently to the same fertilizer application. A knowledge of some of these factors is important to profitable production.
- REFERENCES: Required:
1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 133-172.
 2. Using Commercial Fertilizers, McVickar, pp. 119-124.
- QUESTIONS
or
ACTIVITIES:
1. Name four soil factors that influence the response to fertilizer.
 2. Why is it important to know something about soils when using fertilizer?
 3. How does organic matter improve response to fertilizer?
 4. How does the condition of a soil influence its response to fertilizer?
 5. Does the availability of plant nutrients change with the pH range in a soil?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Principles Involved in the Use of Fertilizers

TOPIC: Ratios and Minimum Grades of Fertilizer

OBJECTIVE: To develop an understanding of the fertilizer ratios and minimum grades.

INTRODUCTION: The grade or analysis of a fertilizer is designated by three numbers listed in the order of nitrogen, phosphorous, and potash. The three numbers give the guaranteed analysis of the three primary food nutrients. These are expressed in percentage, by weight. The ratio in which these are mixed together determines the grade ratio. An understanding of these grade ratios will help in making the decision as to which fertilizer will give best results.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, page 73,
2. Our Land and It's Care, 4th edition, National Plant Food Institute, pp. 56-57.
3. Using Commercial Fertilizer, McVickar, pp. 92-94.

QUESTIONS
or
ACTIVITIES:

1. What is the grade of a fertilizer and how is it expressed on a sack of fertilizer?
2. What is the ratio of fertilizer?
3. What is a "complete" fertilizer?
4. What is an "incomplete" fertilizer?
5. Are the percentages expressed on a bag, indications of the pure plant food form?

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Assignment Sheet
in
FERTILIZER SALES AND SERVICE

- UNIT: Principles Involved in the Use of Fertilizers
- TOPIC: Calculations for Recommendations
- OBJECTIVE: To develop an understanding of the factors involved in calculating fertilizer recommendations.
- INTRODUCTION: Most soil tests are returned to the person who sent the sample, expressing the fertilizer needs such as 30-60-30 per acre. The particular need may not be met in a given fertilizer. Calculations must be understood to be able to determine what plant food will be used to meet the needs as prescribed.
- REFERENCES: Required:
1. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 82-88.
 2. Our Land and Its Care, 4th edition, National Plant Food Institute, pp. 56-57.
- Supplemental:
3. Soil Test Report - Texas A&M University, Agricultural Extension Service, Form D-5145.
- QUESTIONS
or
ACTIVITIES:
1. How can you determine the fertilizer to buy for the soil test recommendation?
 2. What fertilizers could you use to supply a 40-0-0?
 3. Give one fertilizer and amount that would supply a 30-60-30.
 4. Give a fertilizer and amount that would supply a 40-60-0.
 5. What ratio is a 30-60-30?

UNIT: Principles Involved in the Use of Fertilizers
TOPIC: Calculations for Recommendations
(Assignment Sheet continued)

6. What ratio is a 40-60-0?
7. Give an example of a 1:2:1 ratio fertilizer.
8. How much nitrogen is in an 80 lb. sack of 20-0-0?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizers

TOPIC: Principles Involved in Fertilizer Placement and Use

OBJECTIVE: To develop an understanding of the various principles involved in the proper placement and utilization of fertilizers

INTRODUCTION: To get the maximum results from fertilizer, it must be used properly. The method of applying a fertilizer may sometimes affect the yield of a crop as much as the amount that is applied. The primary aim in applying fertilizers should be to get the proper amount of fertilizer in the soil where it will do the most good. To meet this goal, a thorough understanding of the placement principles are vitally important.

REFERENCES: Required

1. The Fertilizer Handbook 4th Edition pp 101-108.
National Plant Food Institute
2. Out Land and It's Care. 4th Edition. pp 48-49.
National Plant Food Institute
3. Methods of Applying Fertilizer, National Plant Food
Institute
4. Using Commercial Fertilizers. McVickar pp 136-156

QUESTIONS
or
ACTIVITIES:

1. Name 10 principles of fertilizer placement and use.
2. What is the primary aim in fertilizer placement?
3. How does irregular fertilizer distribution lower the efficiency of fertilizer?
4. Are nutrient elements in a dry soil used by the plant?
5. How does fertilizer applied too close to seed or young seedlings, damage the plants?

UNIT: Methods of Applying Fertilizers

TOPIC: Principles Involved in Fertilizer Placement and Use

(Assignment Sheet continued)

6. What two ways are nutrients lost when fertilizer is applied on the surface?
7. Does texture of soils affect frequency of application or amount of fertilizer to use?
8. Why is phosphorous usually placed close to the plant?
9. Name three reasons why localized placement of fertilizer, near the seed, is desirable.
10. What are three nutrients that can be absorbed by spraying on leaves?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizers

TOPIC: Common Methods of Applying Fertilizers

OBJECTIVE: To develop an understanding of the common methods of applying fertilizers.

INTRODUCTION: How a fertilizer is applied is probably as important as the amount that is applied. There are a number of methods of applying both dry and liquid fertilizers. A number of factors should be understood to more efficiently apply the fertilizer that is needed. The method used will depend upon the crop, the soil, climatic conditions, date and the rate of application, the equipment available, and the kind of fertilizer being applied.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th Edition, National Plant Food Institute, pp. 101-108
2. Out Land and Its Care, 4th Edition, National Plant Food Institute, pp. 46-49
3. Methods of Applying Fertilizer, National Plant Food Institute

**QUESTIONS
or
ACTIVITIES:**

1. Name three general forms in which fertilizers are applied.
2. Name six factors that determine the method to use in applying fertilizer.
3. What are eleven common methods of applying fertilizer?
4. What two forms of fertilizer may be applied by airplane?
5. What two developments have aided in the application of nitrogen fertilizers?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizer

TOPIC: Time of Fertilizer Application

OBJECTIVE: To develop an understanding of the time of applying fertilizers.

INTRODUCTION: The plants that are deficient or soils that are deficient can use the nutrients any time moisture and climatic conditions are favorable for plant growth and absorption. However, some fertilizers will greatly influence the efficiency of fertilizer application and utilization.

REFERENCES: Required:

1. The Fertilizer Handbook, 4th Edition. pp. 101-108, National Plant Food Institute
2. Our Land and Its Care, 4th Edition, page 47, National Plant Food Institute
3. Methods of Applying Fertilizers, National Plant Food Institute

**QUESTIONS
or
ACTIVITIES:**

1. During what months is most of the fertilizer sold and placed?
2. What disadvantage is this concentration of usage?
3. Does the seasonal operation of fertilizer plants make the fertilizer more expensive?
4. What are the advantages to the farmer in buying fertilizer during slack periods?
5. What storage facilities are necessary for keeping fertilizer on hand?
6. What are the disadvantages of storing fertilizer?
7. What is one disadvantage of early application?

Selection and Maintenance of Fertilizer Equipment
(Information Sheet continued)

2. Well coated with grease on all moving parts
3. Completely inspected and reconditioned
4. Stored in a clean dry shed

At the beginning of the following season, before using the fertilizer applicator, the operator should:

1. Remove the grease coating with a solvent or kerosene
2. Check to see that all moving parts move freely
3. Check all operating adjustments
4. Lubricate the implement thoroughly

Consulting the operator's manual on the particular type of fertilizer application equipment will give specific instructions on problems, care and operation.

Material for this Information Sheet was partially taken from Agricultural Supply - Sales and Service Occupations, Module 9, Ohio State University, Columbus, Ohio.

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Information Sheet
on
SELECTION AND MAINTENANCE OF FERTILIZER EQUIPMENT

The fertilizer distributor, to maintain maximum results, must not only put on the desired amount of fertilizer per acre, but also place the desired amount for each plant in the correct place. In brief, the fertilizer equipment must:

1. Provide even distribution
2. Apply fertilizer properly

A wide variety of application equipment exists because of:

1. Types of fertilizer materials used
2. Varying rates of application needed
3. Varying placements desired
4. Areas to be fertilized

There are several systems of fertilizer application

1. Applying fertilizer alone
2. Applying fertilizer and seed in one operation
3. Tilling and applying fertilizer in one operation
4. Applying fertilizer through irrigation systems
5. Applying fertilizer by plane

Types of fertilizer application equipment comes in the following general types

1. Hand operated machines
 - a. With wheels
 - b. Without wheels
2. Broadcasters
 - a. Full width trailers

Selection and Maintenance of Fertilizer Equipment
(Information Sheet continued)

- b. Trucks, trailers, tractors, and wagons with spreading attachments, such as:
 - 1. Rotary fans
 - 2. Full width hoppers
 - 3. Augers
- 3. Row distributors and drills
- 4. Machines with fertilizer attachments, such as:
 - a. Drills
 - b. Planters
 - c. Tillage equipment
- 5. Liquid and gaseous fertilizer equipment:
 - a. Anhydrous ammonia
 - b. Low pressure solutions
 - c. Non-pressure solutions
 - d. Foliar sprays

When selecting and buying fertilizer application equipment the following factors are important:

- 1. The applicator should be flexible in operation to meet the requirement of most fertilizer applications.
- 2. The applicator should be easy to fill and carry a large load.
- 3. The applicator should apply large and small amounts accurately and be easily adjusted.
- 4. The applicator should correctly place the fertilizer.
- 5. The applicator should be of sturdy construction, easy to maintain, and resist corrosion.
- 6. The applicator should be easily emptied and cleaned.

Since fertilizer applicators are used only for a few days in the year, they seldom wear out. The major damage to applicators is done by rust, corrosion and decay. To guard against these enemies, the fertilizer applicators should always be:

- 1. Thoroughly cleaned, including washing, before storing

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizer

TOPIC: Fertilizer Application Equipment

OBJECTIVE: To develop an understanding of fertilizer application equipment.

INTRODUCTION: Machines and equipment for the application of fertilizers comes in various types and sizes, depending upon the area, crop, conditions and practices. Fertilizer application equipment should be maintained to provide even distribution and placing of the fertilizer properly. An understanding of the various types of equipment available will help to meet the above goals.

REFERENCES: Required:

1. Information Sheet, "Selection and Maintenance of Fertilizer Equipment".
2. The Fertilizer Handbook, 4th edition, National Plant Food Institute, pp. 101-102.
3. Using Commercial Fertilizer, McVicker, pp. 157-163.

Supplemental:

4. Operators Manuals of Fertilizer Equipment sold locally.

QUESTIONS
or
ACTIVITIES:

1. What are two major things fertilizer equipment must accomplish?
2. Why does a wide variety of fertilizer equipment exist?
3. Name five general systems of fertilizer applications.
4. What types of fertilizer applicator equipment is generally available?

UNIT: Methods of Applying Fertilizer
TOPIC: Fertilizer Application Equipment
(Assignment Sheet continued)

5. Name five important factors in selecting fertilizer equipment.
6. Name four factors in the proper care of fertilizer equipment.
7. Name four things to do before using fertilizer equipment.
8. When can a plane be used to an advantage in applying fertilizer?

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Assignment Sheet
for
FERTILIZER SALES AND SERVICE

- UNIT:** Regulations and Control
- TOPIC:** Regulations Controlling Fertilizer Manufacture and Use
- OBJECTIVE:** To develop an understanding of the regulations controlling fertilizer manufacture and use.
- INTRODUCTION:** Each state has a system of inspection and control of fertilizer manufacture, designed to protect the farmers as well as the manufacturers of fertilizer products. By careful sampling, testing, and inspecting, these agencies afford adequate protection to the farmers and manufacturers against an inferior product.
- REFERENCES:** Required:
1. "Texas Commercial Fertilizer Control Act of 1961", MP-513, Texas Agricultural Extension Service
 2. "Rules and Regulations," Adopted by the Texas Feed and Fertilizer Control Service, MP-552, Texas Agricultural Extension Service
 3. Our Land and It's Care, 4th Edition, National Plant Food Institute, pp. 59
- QUESTIONS
or
ACTIVITIES:**
1. What organization controls fertilizer manufacture, sale, and distribution in Texas?
 2. Name three things that all states require of fertilizers.
 3. What is a "commercial fertilizer"?
 4. Can "commercial fertilizers" include animal excretions?
 5. What is a fertilizer material?
 6. Define a "mixed" fertilizer.
 7. What are "specialty" fertilizers used for?

UNIT: Regulations and Control

TOPIC: Regulations Controlling Fertilizer Manufacture and Use
(Assignment Sheet continued)

8. Define "grade" of fertilizers.
9. What is a "bulk" fertilizer?
10. Name five things each fertilizer registration request must include.
11. How is an inspection fee determined and on what basis is it paid?
12. Can fertilizers contain pesticides or fungicides?

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Introduction, Agricultural Salesmanship

1. a. Poor service rendered
b. Discourteous treatment received
c. Indifference on the part of the salesman
(Personal experiences may be varied)
2. Need - may or may not be recognized by the customer. It is based upon reason.
Desire - is a feeling of need. It may not be based upon reason.
3. a. The selling process
b. The merchandise
c. The firm
d. Himself
e. His relation to the customer
f. The customer
4. a. Deals directly with the public
b. Helps others make decisions
c. Something "new" every day
d. Success is quickly recognized
e. Enjoys high prestige
5. A satisfied customer
6. Everyone; the salesman, the firm, and customer, and the public
7. a. Awakens human wants
b. Satisfies human wants
8. a. His need
b. The product needed
c. The source (firm or store)
d. The price
e. The time
9. The product that best fits his needs
10. a. Courtesy
b. Sincere interest
11. Helping the customer to buy intelligently

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Meeting the Customer

1. The first contact gives the customer a lasting impression of the salesman and the business.
2. A well-groomed salesman (a) Attracts customers and (b) Inspires customer confidence
3. Enthusiasm is difficult if the job is unpleasant.
4. a. Promptness b. Alertness c. Interest in the customer and his problems
5. The customer should be treated as a guest.
6. Exercise in recognition of personal characteristics
7. a. Participation in community activities d. A personal notebook on customers
b. Chamber of Commerce information e. Past sales records
c. Comments made by others f. Questions asked others
g. Newspapers
8. Exercise in customer impressions. Depends upon the student's observations.
9. Exercise in product knowledge. Check for extent of knowledge.
10. Exercise in product knowledge, designed to make student aware of customer knowledge of produce.
11. a. Good appearance e. Knowledge of customer
b. Stock displayed attractively f. Selling sentences
c. Knowledge of merchandise g. Knowledge of competitor's product
d. Knowledge of firms advertising h. Possible customer objections and methods of meeting them

UNIT: Agricultural Salesmanship

TOPIC: Meeting the Customer

(Answer Sheet continued)

12. a. Discussions with other employees
b. Indifference to customer needs
c. Timidity in approaching customers
d. Stock duties
13. a. By taking the time to let the customer express the problem
b. By asking questions to determine if the customer understands the problem
c. By suggesting a procedure that will assist with the problem
14. Examples of
a. Conventional - "May I help you, Mr. Jones (or sir)?"
b. Question - "Is this cold weather affecting your milk production, Mr. Brown?"
c. Stating a fact about merchandise - "We've surely been selling a lot of that feed, Mr. Smith."
15. a. Courteous
b. Emphasizes the desire to serve
c. Requires no decision
d. Short
e. Affirmative
16. a. Comfort
b. Pleasure
c. Appetite
d. Possession
e. Fear
f. Devotion
g. Curiosity
h. Ornamentation
i. Imitation
j. Construction
k. Loyalty
17. a. Professional feeling toward selling
b. Courtesy
c. Enthusiasm
d. Interest in the customer and his problems
e. Willingness to develop self-confidence
f. Integrity
g. Desire to be of service
h. Appreciation of psychology

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Presenting Supplies and Services to Customers

1. a. Attention c. Desire
 b. Interest d. Action
2. Attention may be involuntary. Interest is a voluntary reaction.
3. A combination of the needs or wants of the customer with the merits of the merchandise.
4. a. Desire for increased yields
 b. Desire for more profits
 c. Desire for less difficult work
 Others acceptable
5. a. Newspaper advertising
 b. TV or radio advertising
 c. Talk with a neighbor.
 d. Direct mail circulars.
 Others acceptable
6. Student activity. He should include:
 - a. Attention step
 - b. Interest step
 - c. Desire step
7. a. Know the features of the product .
 b. Be able to answer questions about the product.
 c. Be able to demonstrate the product, including its advantages

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT Agricultural Salesmanship

TOPIC Overcoming Customer Resistance

1. The seller and the buyer must "give up" something to secure something. The seller "gives up" merchandise, the buyer, money. Each sale represents a choice.
2. The customer's (a) pleasure, (b) satisfaction, and/or (c) need
3.
 - a. Need - Stress usefulness of a product.
 - b. Quality - Point out good features.
 - c. Source - Name satisfied customers; provide company information or reliability.
 - d. Price - Revealing values of product
 - e. Time - Show positive interest; Counter all objectives.
 - f. Thing (Product) - Showing suitability of the product

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Closing the Sale

1. When the need for the merchandise has been definitely established
2. That of helping the customer make a wise decision
3. When the customer is not aware of his needs or not well aware of product choices
4. Immediately after the customer decides to buy
5.
 - a. The customer has exhibited attention, interest, and desire for the product.
 - b. The relationship between the need and the product has been established.
 - c. Objections have been overcome.
 - d. The price is acceptable.
 - e. The product is approved by the customer.
 - f. The customer has the "power" (ability) to make the purchase.
6. Giving the customer a small decision to make, based upon the major decision to buy. Example: "Do you prefer the red or the green?", "Would you prefer sacks or paper bags?"
7.
 - a. Assuming failure in the beginning
 - b. Hurrying the customer
 - c. Failing to help the customer decide
 - d. Failing to overcome obstacles
 - e. Stressing the wrong selling points
 - f. Trying to force the customer
 - g. Discourtesy at any point
8.
 - a. Write legibly.
 - b. Accuracy
 - c. Name and address completed
 - d. Special directions noted

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Agricultural Salesmanship

TOPIC: Fundamentals for Successful Selling

1. a. A wholesome attitude
b. People
c. Merchandise
d. Good selling methods

2. (Student activity, written)

3. (Student activity, written)

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Importance of Accurate Records

1. a. (1) To know the financial status of the business
(2) To give proper information to company officers and stockholders
(3) To satisfy legal requirements
(4) To plan for desirable change in management and procedures
(5) To prepare tax returns
b. To plan for desirable change in the business
2. Profit or loss for a stated period of time
3. A balance sheet shows all assets and liabilities. The two always are equal
4. All daily records of the firm, including sales tickets, invoices of purchases, and other records.
5. To be sure that this part of the firm's records are correct for the day
6. Because transportation and many other items of expense are involved in the true "cost" of the merchandise to the firm
7. a. To assist in determining the firm's financial condition
b. To plan for purchases of stock
8. \$103,048.16
9. a. Salaries and wages
b. Heat, power and water
c. Advertising
d. All other expenses
e. Depreciation
10. Because the land did not become less valuable
11. a. \$23,173.70
b. \$305,444.24
c. \$10,649.42
d. \$305,444.24

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Answer Sheet for Test
on
IMPORTANCE OF ACCURATE RECORDS

1. Receipts Profit
 Expenses Loss
2. Financial condition
3. Planning purchases
4. Assets
 Liabilities
5. a. Asset c. Asset
 b. Liability d. Asset
 e. Liability

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Sales Tickets

1. Activity
2. Largest
3. All
4. Client
5. Activity

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Answer Sheet for Test
on
SALES TICKETS

	T	F
1.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
2.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3.	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4.	<input checked="" type="checkbox"/>	<input type="checkbox"/>
5.	<input type="checkbox"/>	<input checked="" type="checkbox"/>

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICES

UNIT: Agricultural Salesmanship

TOPIC: Credit

1. a. Merchants or dealers
b. Individuals
c. Commercial banks
d. Insurance companies
e. Federal Land Banks
f. Production credit associations
2. Productive credit is used to make more money. Consumptive credit is used in a manner that is not designed to produce extra income.
3. a. The moral responsibility of the customer
b. History of debt repayment
c. The financial status of the customer (his repayment capacity)
4. a. Large amounts of cash are unnecessary.
b. A cancelled check serves as a receipt.
c. Risk of theft is small.
5. a. Write plainly, in ink.
b. Completely fill the space for the amount of the check that is written.
c. Numbers following the "dollar sign" should be placed as close as possible.
d. Never erase on a check.
e. The purpose should be placed on the check.
6. (Activity) (Examine check for proper execution)
7. The amount shown is paid by a third party, previously arranged and shown on the draft.
8. A written promise to pay a specific amount at a specific future date
9. A written claim against property, guaranteeing the payment of a debt.
10. (Activity)

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Answer Sheet for Test
on
CREDIT

True False

- ☒ 1.
☐ 2.
☒ 3.
☒ 4.
☒ 5.

920-III-4

**Answer Sheet
for
AGRICULTURAL SALES AND SERVICE**

FOPIC. Determining Selling Price

- 2463

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Answer Sheet for Test
on
DETERMINING SELLING PRICE

 a 1.

 d 2.

 c 3.

 a 4.

 a 5.

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Business Records; Ordering and Receiving Merchandise

1. Activity
2. Activity
3. To check against invoices, bills of lading, and goods delivered
4.
 - a. Merchandise received
 - b. Condition of merchandise
5.
 - a. The shipper "prepays" the freight.
 - b. Goods arrive "C. O. D.", with the merchant paying the freight upon delivery.
6. A form used by the carrier (railway, etc.) enumerating items being shipped
7. A statement (bill) due a company for merchandise delivered
8. Invoices are checked for accuracy and compared to purchase orders, receiving records, and bills of lading.
9. Activity

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Answer Sheet for Test
on
BUSINESS RECORDS: ORDERING AND RECEIVING MERCHANDISE

 b 1.

 c 2.

 a 3.

 c 4.

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT Business Procedures

TOPIC Inventories

1. An accurate listing of the firm's merchandise on hand with its value
2.
 - a. For periodic analysis of the business
 - b. To determine age of stock on hand
 - c. To indicate volume of business by items
 - d. For location of losses
3. A system for making sure that adequate, but not excessive amounts of merchandise is on hand
4. An inventory kept up-to-date constantly by addition of purchases and deletion of sales
5. At the end of the firm's fiscal year and often at other times
6.
 - a. Arranging stock
 - b. Checking condition of stock
 - c. Separation into departments or categories
 - d. Listing values of the stock
7.
 - a. Location of the merchandise
 - b. Department to which merchandise is charged
 - c. Names of persons preparing the inventory
 - d. Information on age and quality of the merchandise
8. (Activity)

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Answer Sheet for Test
on
INVENTORIES

True False

☒ 1.

☒ 2.

☒ 3.

☒ 4.

☒ 5.

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Receiving and Storing Merchandise

1. As unloading proceeds
2. On the receiving form and in other ways used by the firm
3. By exact count or by weight
4. As soon as possible after its arrival
5. (Activity)

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Answer Sheet for Test
on
RECEIVING AND STORING MERCHANDISE

 b 1.

 c 2.

 a 3.

 c 4.

 b 5.

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Answer Sheet
for
AGRICULTURAL SALES AND SERVICE

UNIT: Business Procedures

TOPIC: Stocking and Merchandise Planning

1. (Opinion question) May include past experience; weather conditions affecting farmer needs, etc.
2. a. Capital utilized unproductively; store or warehouse space tied up.
b. Loss of sales; undesirable customer relations.
3. Any employee
4. (Activity)
5. (Activity)
6. (Activity - thought question)
7. (Activity)

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Answer Sheet for Test
on
STOCKING AND MERCHANDISE PLANNING

1. Capital (shelf space: o.k.)
2. Business
3. Every employee
4. Every employee
5. ~~Old~~

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT Introduction to Fertilizers

TOPIC Importance of Fertilizers in Modern Farming

1.
 - a. Increase yields.
 - b. Increase profits.
 - c. Improve soils.
2. Both require food for growth and development.
3.
 - a. Air
 - b. Water
 - c. Soil
4.
 - a. Erosion
 - b. Harvested crops
 - c. Leaching
5.
 - a. Kind of soil
 - b. Cropping sequence
 - c. Farm income
 - d. Soil test recommendations
6. 1945 - 234,000 tons
1964 - 1,336,000 tons
7. 86.1 million dollars
8. Yes, a soil is limited to the element that is lowest in its soil.

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Answer Sheet for Test
on
IMPORTANCE OF FERTILIZERS IN MODERN LIVING

1. a. Addition of water
b. Addition of organic matter
c. Addition of fertilizers or other soil amendments
2. a. Increase yields.
b. Increase profit.
c. Improve the soil.
3. They both need food for growth and development.
4. a. Erosion
b. Harvested crops
c. Leaching
5. a. Air
b. Water
c. Soil

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizer

TOPIC: What is Fertilizer?

1. A substance which contains one or more of the chemical plant food elements in forms that can be absorbed by plants and which promote growth.
2. Chemicals contained in fertilizer and essential to plant growth
3. a. Nitrogen b. Phosphorous c. Potash
4. 16
5. a. Nitrogen f. Sulphur
 b. Phosphorous g. Chlorine
 c. Potash h. Copper
 d. Calcium i. Manganese
 e. Magnesium j. Zinc
6. No
7. To be available to growing plants, plant food elements must be associated with certain other elements in the form of specific chemical compounds.
8. Nutrient-bearing chemical compounds
9. 1% of a ton or 20 lbs.
10. A mixed fertilizer containing the three primary plant nutrients of nitrogen, phosphorous, and potash.
11. A combination of all the needed plant food elements chemically or by mixing.
12. a. Nitrogen b. Phosphorous c. Potash

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Answer Sheet for Test
on
WHAT IS FERTILIZER?

1. Food
Growth
Development
2. Chemical
Essential
3. Nitrogen
Phosphorous
Potash
4. Combined
5. Nutrient
6. Sixteen
7. One
8. Mixed
9. Nitrogen
Phosphorous
Potash

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizers

TOPIC: Forms of Fertilizers

1. a. Solids b. Liquids c. Suspensions
2. Anhydrous ammonia
3. Solid held in solution by agitation
4. Dry, solid
5. a. Dry powder b. Pelleted
6. Material, from decayed plants and animal matter
7. Organic matter
8. Nitrogen
9. To correct micro or minor element deficiencies
10. More quickly and more readily available to the plant

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Answer Sheet for Test
on
FORMS OF FERTILIZER

1. a. Liquid
b. Dry
c. Suspension
2. Anhydrous ammonia
3. a. Pelleted
b. Powder
4. Pelleted
5. Organic matter

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Introduction to Fertilizers

TOPIC: How Fertilizers are Made

1. 1849, phosphate
2. Nitrogen
3. Ammonia
4. a. Anhydrous ammonia
b. Calcium cyanamide
c. Ammonium nitrate
c. Sodium nitrate
d. Potassium nitrate
5. a. Meat scraps
b. Cottonseed meal
6. Rock phosphate
7. Florida
8. New Mexico
9. Potassium chloride or muriate of potash
10. From making and mixing other fertilizers and "straight" materials
11. Addition of pesticides

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Answer Sheet for Test
on
HOW FERTILIZERS ARE MADE

1. F
2. T
3. F
4. F
5. T

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Soils and Soils Problems

TOPIC: Taking and Using Soil Samples to Determine Fertilizer Needs

1. A chemical analysis of a soil
2.
 - a. PH (acidity or alkalinity)
 - b. Available phosphate
 - c. Available potash
 - d. Nitrogen
 - e. Available calcium
 - f. Soluble salts
 - g. Recommendations for correcting soil deficiencies
 - h. Organic matter
3.
 - a. Study instructions.
 - b. Scrape away litter on surface and take sample to depth of 2 to 6".
 - c. Use an auger or soil probe.
 - d. Thoroughly mix sample.
 - e. Sample each field or area of different characteristics.
 - f. Stay out of odd places.
 - g. Take soil 12 or more spots in field.
 - h. Clean tools before using on other samples.
 - i. Fill out information sheet.
 - j. Number sample and keep record.
 - k. Lime or fertilize as recommended.
4. Activity
5. Activity

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Answer Sheet for Test
on
TAKING AND USING SOIL SAMPLES TO
DETERMINE FERTILIZER NEEDS

1. Soil
2. Chemical
3. Test
4. Samples
5. Acidity or alkalinity
6. College or commercial
7. Phosphate, potassium, nitrogen
Recommendations

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT Soils and Soil Problems

TOPIC Interpretation of Soil Test Results

1. a. Soil reaction (pH)
b. Organic matter
c. Predicted nitrogen level
d. Available phosphorous
e. Available potash
f. Available calcium
g. Soluble salts (salinity hazard)
2. a. Soil reaction (pH) - Acidity or alkaline range
b. Organic matter - Percent of organic matter in sample
c. Predicted nitrogen level - Possible level of nitrogen in soil
d. Available phosphorous - Amount of phosphorous available to plants
e. Available potash - Amount of potash available to plant
f. Available calcium - Amount of calcium available to the plants
g. Salinity hazard (soluble salts) - level of salt build up that may be hazardous to plant growth
3. Yes
4. Available calcium pH with amount of clay and amount of organic matter
5. Pounds of actual plant food
6. Plants, like animals have better growing conditions that favor production. Some plants do better on acid soils or "Sour" soils and others do better on alkaline or "Sweet" soils.
7. Acid - 4.5 for extremely acid to 6.5 for slightly acid
Neutral - 7.0
Alkaline - 7.0 slightly alkaline to 9.1 and up for very strongly alkaline

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Answer Sheet for Test
on
INTERPRETATION OF SOIL TEST RESULTS

1.
 - a. Soil reaction or pH
 - b. Available phosphorous
 - c. Nitrogen level
 - d. Available potash
 - e. Organic matter
2. Each plant grows better in a certain pH range.
3.
 - a. Available calcium
 - b. Amount of clay
 - c. Amount of organic matter
 - d. pH range
4. Pounds of actual plant food per acre
5. 200 pounds of a 20% nitrogen fertilizer per acre or the equivalent.
($20\% \times 200 = 40 \text{ lb.}$)

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT 1 - Soil and Soil Problems

TOPIC 1 - The pH Range and its Relation to Crop Production

1. The degree or state of sourness (acid) or sweetness (alkaline) in the soil.
2. From 0 to 14.
3. 7.0
4. 7.0
5. Above 7.0
6. Soil pH decreases by leaching and crop harvest of such as calcium, magnesium, and potassium.
7. Flowers and fruits
8. 6.0
9. 6.0 to 7.0
10. a. Corn - 6.0 - 7.5
b. Cotton - 6.0 - 8.0
c. Bermuda grass - 5.5 - 7.5
d. Grain sorghum - 5.5 - 7.0
e. Peaches - 6.0 - 7.5

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Answer Sheet for Test
on
THE pH RANGE AND ITS RELATION TO CROP PRODUCTION

1. Acidity (sour)
Alkaline (sweet)
2. Zero to fourteen
3. Acid -- 0-7
Alkaline -- 7-14
4. Acid
Leaching, harvest
5. Availability
pH

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT - Soils and Soil Problems

TOPIC - Liming of Soils

1. Limestone

2. a. Physical b. Chemical c. Biological

- a. Physical - produces better soil structure, influences growth and organic matter.
- b. Chemical - neutralizes soil, makes phosphorous more available, decreases toxic substances and adds calcium and magnesium to the soil.
- c. Biological - stimulates growth and activity of helpful soil organisms, such as bacteria and fungi.

3. Any material containing calcium or magnesium (or both) and capable of neutralizing acidity.

4. a. Cracked agricultural limestone Ground dolomitic limestone
b. Precipitated (builders lime) lime
c. Hydrated lime
d. Oyster shell

5. a. Neutralizing soil acids and toxic materials
b. Making other nutrients available
c. Supplying calcium and magnesium
d. Help beneficial organisms in soil
e. Improve physical conditions of soil
f. Prevention of diseases

6. Sandy soils

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Answer Sheet for Test
on
LIMING SOILS

1. T
2. F
3. T
4. F
5. T

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Soils and Soil Problems

TOPIC: Correcting Alkaline and Saline Soils

1. a. Sore b. Increase the salt content of the solution in the soil.
c. Alkal A condition where excessive amounts of sodium have replaced calcium and magnesium in the soil.
2. a. Saline b. Saline - alkali c. Non-saline alkali
3. a. Low rainfall and high evaporation
b. Inadequate drainage
c. Poor irrigation practices
d. Use of poor quality irrigation water
4. Reduces the amount of water absorbed by the roots and a direct toxic or poisonous action on plants
5. Adequate underground drainage
6. Presence of sodium in amounts sufficient to interfere with plant growth of most crop plants.
7. Application of chemical soil amendments which either supply or release calcium
8. a. Soluble calcium salts
b. Low soluble calcium salts
c. Acids or acid forming materials
9. A soil test

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Answer Sheet for Test
on
CORRECTING ALKALINE AND SALINE SOILS

1. Saline
Alkali
2.
 - a. Low rainfall-high evaporation
 - b. Inadequate drainage
 - c. Poor irrigation practices
 - d. Using poor quality irrigation water
3.
 - a. Reduces amount of water absorbed by roots
 - b. Toxicity (poisonous) to plants
4. Chemical
5. Soil test

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Sources of Fertilizer Nutrients

TOPIC: Nitrogen Fertilizers

1. Yes
2. Legumes
3.
 - a. Ammonium nitrate
 - b. Ammonium sulphate
 - c. Ammonium phosphate
 - d. Urea
 - e. Sodium nitrate
 - f. Nitrate of soda - potash
 - g. Nitric phosphate
4. Ammonia
5.
 - a. Anhydrous Ammonia
 - b. Liquid Nitrogen solution
6.
 - a. Animal manure
 - b. Organic matter
 - c. Legumes
7. Nitrate, the ammonium form, moves very little.

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Answer Sheet for Test
on
NITROGEN FERTILIZERS

1. F
2. T
3. F
4. F
5. T

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Sources of Fertilizer Nutrients

TOPIC: Phosphorous Fertilizers

1. Rock phosphate
2.
 - a. Phosphate rock
 - b. Animal manure
 - c. Organic matter
 - d. Commercial fertilizers
3.
 - a. Super-phosphate
 - b. Triple super-phosphate
 - c. Liquid phosphoric acid
 - d. Ammonium phosphate
 - e. Nitric phosphate
4. Ammonium phosphate
5. No, very little
6. Liquid phosphoric acid

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Answer Sheet for Test
on
PHOSPHOROUS FERTILIZERS

1. Rock phosphate
2. Super-phosphate
3. Ammonium
4. Liquid phosphorous acid
5. Very little

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Answer Sheet
 for
 FERTILIZER SALES AND SERVICE

Q.V.P. Sources of Fertilizers

TOPIC Potash Fertilizers

1. a. Potassium chloride (muriate of potash)
 b. Potassium sulphate
 c. Potassium magnesium sulphate
2. New Mexico
3. a. Native soil potassium
 b. Animal manure
 c. Organic matter
4. a. Very little in heavy clay soils
 b. Moves with moisture in sands and sandy loams

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Answer Sheet for Test
on
POTASH FERTILIZERS

1. Burns
2.
 - a. Potassium chloride
 - b. Potassium sulphate
 - c. Potassium-magnesium sulphate
3. New Mexico
4.
 - a. Soil
 - b. Organic matter
 - c. Animal manure

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT - Sources of Fertilizer Nutrients

TOPIC - Secondary and Trace Elements

1. a. Calcium b. Magnesium c. Sulphur
2. a. Boron d. Manganese g. Chlorine
- e. Copper e. Molybdenum
- f. Iron f. Zinc
3. Secondary Element Sources:
 - a. Calcium - Limestone
 - b. Magnesium - Dolomite, Limestone and Potassium-Magnesium Sulphate
 - c. Sulphur - Natural sulphur or gypsum or sulphuric acid
4. Trace element sources supplied individually as:
 - a. Specific compound or specially mixed forms

Manganese - Manganese sulphate

Boron - Borax

Molybdenum - Sodium molybdate

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Answer Sheet for Test
on
SECONDARY OR TRACE ELEMENTS

1. Calcium
Magnesium
Sulphur
2. a. Copper
b. Iron
c. Zinc
d. Boron
e. Manganese
3. a. Calcium - Limestone
b. Sulphur - Natural sulphur
c. Boron - Borax

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT Functions of Plant Food Elements

TOPIC Functions of Primary Plant Foods

1. Plants use nitrogen, phosphorus and potash in large quantities.
2. Functions of nitrogen
 - a. Gives dark green color to plants
 - b. Promotes rapid growth
 - c. Increases yields of leaf fruit or seed
 - d. Improves quality of leaf crops
 - e. Increases protein content
 - f. Feeds soil micro-organisms
3. Functions of phosphorus
 - a. Stimulates early root formation and growth
 - b. Gives rapid and vigorous start to plants
 - c. Winter hardiness
 - d. Stimulates blooming and aids seed formation
 - e. Gives winter hardiness to fall grains and hay crops
 - f. Important to germinating seedlings
4. Functions of potash
 - a. Imparts increased vigor and disease resistance to plants
 - b. Aids in protein production
 - c. Produces strong stiff stalks
 - d. Increases plumpness of seeds
 - e. Improves quality of fruit
 - f. Essential to formation of starches, sugars and oils
 - g. Aids development of root crops
 - h. Aids in formation of red color in fruit and leaves
 - i. Stiffens stalks

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Answer Sheet for Test
on
FUNCTIONS OF PRIMARY PLANT FOODS

1. a. Nitrogen
 - (1) Gives dark green color
 - (2) Promotes rapid growth
- b. Phosphorous
 - (1) Stimulates root growth
 - (2) Hastens maturity
- c. Potash
 - (1) Gives vigor and disease resistance
 - (2) Stiffens stalks

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(606 per page)

Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT 7 - Functions of Plant Food Elements

TOPIC - Functions of Secondary Foods

1. The plant uses less amounts of these than the primary elements.
2. Calcium
Magnesium
Sulphur
3. Functions of Calcium
 - a. Promotes early root formation and growth.
 - b. Improves general vigor and growth
 - c. Facilitates improvement in soil structure
 - d. Neutralizes poisons in the plant
 - e. Encourages grain and seed production
 - f. Increases calcium content of food and feed crops
 - g. Helps correct some soil acidity problems

Functions of Magnesium:

- a. Essential part of chlorophyll
- b. Necessary for sugar formation
- c. Helps regulate uptake of other plant foods
- d. Acts as carrier for phosphorous
- e. Promotes formation of oils and fats
- f. Helps correct some soil acidity problems

Functions of Sulphur

- a. Essential part of protein
- b. Helps maintain dark green color
- c. Promotes nodule formation in legumes
- d. Stimulates seed production
- e. Encourages vigorous plant growth
- f. Helps correct soil alkalinity

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Answer Sheet for Test
on
FUNCTIONS OF SECONDARY PLANT FOODS

1. Calcium - Promotes early root formations and growth
2. Magnesium - Helps regulate uptake of other plant foods
3. Sulphur - Essential ingredient of protein

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Functions of Macro Nutrients

1. Trace elements

2. Boron

- a. Increases yield or improves quality of fruit or vegetables
- b. Important to seed production
- c. Associated with calcium utilization and sugar transfer within plants
- d. May cause barren stalks in corn if deficient

Copper

- a. Needed to reduce wilting
- b. Seed setting is aided

Zinc - Needed for chlorophyll production

Iron - Essential in forming chlorophyll production

Molybdenum - Influences utilization of nitrogen

Manganese

- a. Accelerates germination and maturity
- b. Increases availability of calcium and magnesium and phosphorous
- c. Aids in chlorophyll production

Chlorine - Affects quality of tobacco, potatoes, and other crops

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Answer Sheet for Test
on
FUNCTIONS OF MICRO NUTRIENTS

1.
 - a. Boron
 - b. Zinc
 - c. Manganese
 - d. Copper
 - e. Molybdenum
2. Trace elements
3. No

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Nutrient Deficiency Signs in Plants

1. a. Acute Deficiencies - Usually shows abnormalities in the plant
b. Hidden Hunger - Goes unseen until color indication or reduced plant yields gradually show

2. Nitrogen

- a. Sickly, yellowish green color
- b. Slow dwarfed growth
- c. Drying or "firing" of leaves, starting at bottom of plant

Phosphate

- a. Purplish leaves, stems and branches
- b. Slow growth and maturity
- c. Small slender stalk in corn
- d. Low yield of grain, fruit or seed

Potash

- a. Lower leaves scorched or burned on margins and tips
- b. Mottling, spotting, streaking or curling of leaves, starting at lower level on plant
- c. Premature loss of leaves and small "knotty" poorly opened bolls on cotton
- d. Poor root development and falling down, prematurely, in corn

3. Calcium

- a. Young leaves in terminal bud have a "hooked" appearance, and die back at tips and along margins
- b. Leaves have a wrinkled appearance.
- c. Young leaves, sometimes, remain folded.

Sulphur

- a. Young leaves light green in color
- b. Short, slender stalks, yellow in color
- c. Slow, stunted growth

UNIT: Functions of Plant Food Elements
TOPIC: Nutrient Deficiency Signs in Plants
(Answer Sheet continued)

Magnesium

- a. General loss of green color, starting at bottom leaves and moving up
- b. Cotton leaves turn purplish-red between green veins.
- c. Weak stalks with long branched roots
- d. Definite and sharply defined series of yellowish-green, light yellow, or even white streaks throughout entire leaf of corn
- e. Leaves curve upward along margins

4. Boron

- a. Cracked stem on celery
- b. Brown rot of cauliflower
- c. Dry rot of sugar beets
- d. Heart rot of turnips
- e. Yellow top of alfalfa
- f. Corky cone of apples
- g. Lack of seed in corn and cotton

Manganese

- a. Pale green to yellow and red colors between green veins of leaves on tomatoes and other vegetables
- b. "Grey speck" in oats
- c. Chlorosis, or bleaching of leaves in leafy plants

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Answer Sheet for Test
on
NUTRIENT DEFICIENCY SIGNS IN PLANTS

1. Iron
2. Boron
3. Sulphur
4. Nitrogen
5. Phosphate
6. Magnesium
7. Calcium
8. Zinc
9. Nitrogen
10. Magnesium

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Functions of Plant Food Elements

TOPIC: Plant Growth and Nutrient Uptake

1. Helps to produce better crops at lower cost
2. The leaves, flowers, roots and stems are vital parts to plant life just as hearts, lungs, and stomachs are to people. Both plants and people are made up of cells.
3. To combine or put together carbon dioxide and water by chlorophyll (green color) in the presence of light
4. Any substance which can be used as a source of energy for carrying on the life process
5. a. Carbohydrates b. Fats c. Proteins
6. The process of a gas or substance moving from an area of high concentration to an area of lower concentration
7. The release of chemical energy. Occurs in the plant cell.
8. Cells need water to divide and function properly.
9. The root hair
10. a. Transpiration b. Bleeding c. Guttation
11. The same conditions that increase or decrease cell growth and activity increases or decreases the nutrients that are absorbed by plants.
12. Vascular bundles

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925-VII..5

Answer Sheet for Test
on
PLANT GROWTH AND NUTRIENT UPTAKE

1. T
2. T
3. F
4. T
5. F
6. F
7. T
8. T
9. T
10. T

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Fertilizers of Primary Plant Foods

TOPIC: Plant Food Removed by Crops

1. The amount removed each year by the crop harvested
2. Plant food is lost in three ways other than crop harvest.
 - a. Erosion or leaching
 - b. Plant foods are sometimes "fixed" in soil.
 - c. Current fertility level is usually below that required for economic production
3. 135 lbs. of nitrogen
53 lbs. of phosphate
40 lbs. of potassium
2 lbs. of calcium
8 lbs. of magnesium
10 lbs. of sulphur
.1 lbs. of boron
.06 lbs. of copper
.09 lbs. of manganese
.15 lbs. of zinc
4. 40 lbs. of nitrogen
20 lbs. of phosphate
15 lbs. of potassium
2 lbs. of calcium
4 lbs. of magnesium
2 lbs. of sulphur
.06 lbs. of copper
.11 lbs. of manganese
.32 lbs. of zinc
5. 27 lbs. of nitrogen
17 lbs. of phosphate
2 lbs. of potassium
13 lbs. of calcium

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Answer Sheet for Test
on
PLANT FOOD REMOVED BY CROPS

1. Plant food
2. Yield
Quality and profit
3. Fixed
4. Animal
5. Replaced

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Principles Involved in the Use of Fertilizers

TOPIC: The Economic Principles of Fertilizer Use

1. a. Increased yield
b. Improved quality
c. Combination of yield and quality increase
2. 25 to 50%
3. When the cost of the fertilizer is less than the added income from the use of fertilizer
4. a. Labor c. Equipment
b. Land d. Taxes
e. Seed
5. Money invested in fertilizer may result in increased profits over and beyond fixed costs.

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Answer Sheet for Test
on
THE ECONOMIC PRINCIPLES OF FERTILIZER USE

1. a. Increased yield b. Improved quality
2. 25 to 50%
3. When the added cost of applying the fertilizer is less than the added returns
4. By increased yield and quality on the same fixed costs
5. Yes, some crops respond more to the use of fertilizer,

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT. Principles Involved in the Use of Fertilizers

TOPIC. Soil Factors that Affect the Response to Fertilizers

1. a. Chemical composition
b. Organic matter
c. Physical condition of soil
d. Soil reaction of pH range
2. Soils vary in characteristics and composition; a knowledge of the soil being fertilized will aid in high profits from applying fertilizers.
3. Organic matter "opens" the soil causing the soil to take in more moisture, and feeds micro-organisms that are beneficial.
4. Soils with good tilth or condition holds more water and nutrients for the plants.
5. Yes

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Answer Sheet for Test
on
SOIL FACTORS THAT AFFECT RESPONSE TO FERTILIZERS

1. a. Chemical composition
b. Soil condition or tilth
- c. Organic matter
d. Soil reaction or pH
2. Opening
Holding
Food
3. Organic matter
4. Nutrients
5. Composition

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Principles Involved in the Use of Fertilizers

TOPIC: Ratios and Minimum Grades of Fertilizers

1. The minimum guarantee of plant food content in a fertilizer
The grade is expressed in percent by weight of nitrogen, phosphorous, and
potash, in that order.
2. The ratio is the relationship of one nutrient to the others in the fertilizer mix.
3. A fertilizer containing all three primary plant foods
4. Fertilizer containing one or two but not all primary plant foods
5. No

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Answer Sheet for Test
on
RATIOS AND MINIMUM GRADES OF FERTILIZERS

1. T
2. F
3. T
4. F
5. T

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Principles Involved in the Use of Fertilizers

TOPIC: Calculations for Recommendations

1. Consider the ratio of the nutrients recommended and use a fertilizer with the same ratio, using enough to supply the amount.
2. 200 lbs. of 20-0-0
90 lbs. of 45-0-0
50 lbs. of 82-0-0
3. 10-20-10-300 lbs.
4. 200 lbs. of 20-0-0 plus 135 lbs. of 0-45-0
5. 1:2:1
6. 2:3:0
7. 6-12-6 or 10-20-10
8. 16 lbs. of nitrogen

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Answer Sheet for Test
on
CALCULATIONS FOR RECOMMENDATIONS

1. a. Consider the ratio recommended.
b. Use a fertilizer with same ratio in the amount that would supply the need.
2. 1-2-1 ratio
3. 400 lbs. of 20-0-0
4. 300 lbs. of 10-20-10
5. 9.6 lbs. of N
19.2 lbs. of P
9.6 lbs. of K

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizers

TOPICS: Principles Involved in Fertilizer Placement and Use

1.
 - a. Adequate amounts of plant nutrients, applied properly in the correct place
 - b. Bad distribution lowers efficiency.
 - c. Nutrients are not absorbed by plants in dry cells.
 - d. Fertilizer placed too close, damages plants or seeds.
 - e. Fertilizer applied on the surface is easily lost.
 - f. Coarse texture soils should have less amounts applied at a time, but more frequent applications.
 - g. Early stimulation of seed is important.
 - h. Localized placement, near seed is desirable.
 - i. Placing fertilizer too far from seed or plants may retard them until they grow to the plant food.
 - j. Some fertilizer elements may be sprayed on leaves.
2. Placing or applying of fertilizer in the proper amount in the soil where it will do the most good
3. Some plants get too much and others not enough
4. No
5.
 - a. Injure roots
 - b. Impair germination
6.
 - a. Erosion
 - b. Leaching
7. Yes
8. Phosphorous moves very little from placement.
9.
 - a. Restricted contact of fertilizer with soil lessens the fixing of phosphate.
 - b. Necessary plant food placed within reach of plant
 - c. Fertilizer placed in band near row does not furnish nutrients to weeds growing in middle.
10.
 - a. Zinc
 - b. Manganese
 - c. Copper

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Answer Sheet for Test
on
PRINCIPLES INVOLVED IN
FERTILIZER PLACEMENT AND USE

- | | | |
|---------------------|----------|---------|
| 1. Application | Amount | |
| 2. Amount | Place | Good |
| 3. Plants | Little | |
| 4. Dry | | |
| 5. Injure | | |
| 6. Phosphorous | | |
| 7. Surface | Leaching | Erosion |
| 8. Bands | Weeds | |
| 9. Spraying | | |
| 10. Type or texture | | |

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT Methods of Applying Fertilizers

TOPIC Common Methods of Applying Fertilizers

1. a. Dry
 - (1) Powder
 - (2) Granular
- b. Liquids
- c. Gas

2. a. Crop
- b. Soil
- c. Climate
- d. Date and rate of application
- e. Equipment available
- f. Kind of fertilizer

3. a. Banding along row
- b. Broadcast
- c. Deep draft
- d. Deep furrow or plow sole
- e. Drill with seed
- k. Irrigation
- f. Foliar
- g. Side dressing
- h. Bedding
- i. Starter solution
- j. Top dressing

4. a. Dry and Granular
- b. Liquid

5. a. Anhydrous Ammonia
- b. Nitrogen solutions

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Answer Sheet for Test
on
COMMON METHODS IN APPLYING
FERTILIZERS

1. T
2. F
3. F
4. T
5. F
6. T
7. T
8. T
9. F
10. F

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT Methods of Applying Fertilizer

TOPIC Time of Fertilizer Application

1. March, April, and May
2. a. It makes fertilizer more costly.
b. Inconvenient for the manufacturer and the consumer
3. Yes
4. a. Applying fertilizer as he has time
b. Fall application is easier.
c. Less power needed in fall than in spring.
5. Dry storage
6. a. Storage facilities are expensive.
b. More handling costs
7. Loss of nutrients by erosion or leaching is possible.

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Answer Sheet for Test
on
TIME OF FERTILIZER APPLICATION

1. March, April, and May
2. Expensive
3. Dry
Expensive
4. Leaching
Erosion
5. Micro-organisms

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Methods of Applying Fertilizer

TOPIC: Fertilizer Application Equipment

1. a. Apply in proper place. b. Distribute fertilizer evenly.
2. a. Types of fertilizer materials used
b. Various rates of application
c. Different placement desired
d. Areas to be fertilized
3. a. Applying fertilizer alone
b. Applying fertilizer and seed in one application
c. Tilling and applying fertilizer in one application
d. Applying fertilizer in irrigation systems
e. Applying fertilizer by air
4. a. Hand operated machines, wheeled and without wheels
b. Broadcasters
 (1) Fill width trailers
 (2) Trucks, trailers, tractors, and wagons with spreading attachments
 such as:
 (a) Rotary fans (b) Rull width hoppers
 (c) Auger spreader tubes
c. Row distributors and drills
d. Machines with fertilizer attachments, such as:
 (1) Drills (2) Planters (3) Tillage equipment
e. Liquid and gaseous fertilizer equipment
 (1) Anhydrous ammonia (3) Non-pressure solutions
 (2) Low pressure solutions (4) Foliar sprays
f. Airborne fertilizer equipment
5. a. Applicator must be flexible in operation to meet the need of most
fertilizer applications.
b. Should be easily fitted and carry large load.

UNIT: Methods of Applying Fertilizer
TOPIC: Fertilizer Application Equipment
(Answer Sheet continued)

- c. Should be able to apply large and small amounts accurately and be easily adjusted.
 - d. Should place fertilizer correctly.
 - e. Should be of sturdy construction, easy to maintain and should resist corrosion.
 - f. Should be easy to empty and clean.
6. a. Thoroughly clean and wash before storing.
b. Coat all moving parts with grease.
c. Inspect and maintain in good condition.
d. Store in clean dry shed.
7. a. Remove grease coating with kerosene.
b. Check to be sure all parts are moving freely.
c. Check all operating adjustments.
d. Lubricate thoroughly.
8. a. Wet, soggy areas.
b. Terrain where ground application is not possible.

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Answer Sheet for Test
on
FERTILIZER APPLICATION EQUIPMENT

1. a. Distribute evenly.
b. Place correctly.
2. a. Apply fertilizer alone.
b. Seed and apply fertilizer in one operation.
c. Tillage and fertilize in one operation.
d. Apply fertilizer in irrigation water.
e. Apply fertilizer by airplane.
3. a. Hand machines
b. Broadcasters
c. Row distributors and drills
d. Machines with distributors such as drills and planters
e. Liquid and gas applicators
4. a. Thoroughly clean and wash before storing.
b. Coat all moving parts with grease.
c. Inspect and maintain regularly.
d. Store in clean dry place.
5. a. Extremely wet soggy areas
b. Ground not possible to cover by ground equipment

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Answer Sheet
for
FERTILIZER SALES AND SERVICE

UNIT: Regulations and Control

TOPIC: Regulations Controlling Fertilizer Manufacture and Use

1. Texas Feed and Fertilizer Control Service, Texas A&M University, College Station, Texas
2.
 - a. Registration of brands and grades of fertilizer
 - b. Guarantee of percent of (N)Nitrogen, (P_2O_5)Phosphorous, and (K_2O) Potash
 - c. Penalty for failure to meet the guarantee
3. Mixed fertilizer and/or fertilizer materials intended for use as an ingredient or component of a mixture, designed or represented for use in promoting plant growth
4. No
5. Any solid or non-solid compound which contains any essential plant nutrient element in a form available to plants and used primarily for promoting plant growth
6. A solid or non-solid product which results from the combination, mixture, or simultaneous application of two or more fertilizer materials
7. Lawns, shrubbery, flowers, golf courses, parks, cemeteries, greenhouses, or nursery
8. Percent of total nitrogen phosphorous and potash guaranteed in a commercial fertilizer
9. A lot of any commercial fertilizer which is not in a closed container at the time it passes into possession of the consumer
10.
 - a. Name and address of the person responsible for distributing commercial fertilizer
 - b. The brand and grade
 - c. The guaranteed analysis listing minimum percent of plant nutrient
 - d. Sources from which the plant nutrients are derived
 - e. Copies of all printed material covering the sale and distribution

UNIT: Regulations and Control

TOPIC: Regulations Controlling Fertilizer Manufacture and Use

(AnswerSheet continued)

11. Set by the Control Service, at the rate of 25¢ per ton of commercial fertilizer distributed in this state or a minimum inspection fee of \$25.00 per year, which ever is the greatest.
12. Yes

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Answer Sheet for Test
on
REGULATIONS CONTROLLING
FERTILIZER MANUFACTURE AND USE

1. T
2. F
3. T
4. F
5. T
6. F
7. T
8. F
9. T
10. F

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920-III-1

Topic Test
on
IMPORTANCE OF ACCURATE RECORDS

Student. _____ School: _____

Date: _____ Score: _____

1. An "operating statement" summarizes the _____ and _____ for a given period of time and shows the _____ or _____ for the period.
2. A "balance sheet" shows the _____ of the company at a given time.
3. Records of stocks and inventories are needed for determining the financial condition of the firm and for _____.
4. Total _____ and total _____ are always the same on a balance sheet.
5. On a balance sheet each item below would be either an "asset" or a "liability".
Which in each case?
 - a. Land _____
 - b. Taxes Payable _____
 - c. Inventory _____
 - d. Cash on hand _____
 - e. Accounts Payable _____

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Topic Test
on
SALES TICKETS

Student: _____ School: _____
Date: _____ Score: _____

Check in the correct column:

 T F

- | | | |
|-------|-------|--|
| _____ | _____ | 1. Sales tickets need to be numbered consecutively. |
| _____ | _____ | 2. Once the cash register is balanced, sales tickets are no longer needed. |
| _____ | _____ | 3. This entry would be sufficient for a sale ticket under <u>description</u> : "1 gal. insect poison". |
| _____ | _____ | 4. The customer should sign "charge" tickets. |
| _____ | _____ | 5. The best change for a \$1.66 purchase when the customer presents a \$10 bill would be three pennies, one 5¢ piece, one 25¢ piece and eight \$1 bills. |

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Topic Test
on
CREDIT

Student _____ School: _____

Date: _____ Score: _____

True False

- _____ 1. Productive credit is utilized to earn profits.
- _____ 2. One source of farm credit is the Soil Conservation Service.
- _____ 3. Checks should not be written in pencil.
- _____ 4. A written claim against property is called a "note".
- _____ 5. A cancelled check serves as a receipt.

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Topic Test
on
DETERMINING SELLING PRICE

Student: _____ School: _____

Date: _____ Score: _____

Multiple Choice:

- _____ 1. Costs that vary little or not at all are called (a) fixed (b) standard (c) recommended (d) fair-trade costs.
- _____ 2. The amount added to the cost of an article to secure the selling price is called (a) margin (b) gross margin (c) net profit (d) markup.
- _____ 3. If an item costs a merchant \$1.00 and retails for \$1.25, the markup is what percent?
(a) 125%
(b) 20%
(c) 25%
(d) 50%
- _____ 4. Markup and gross margin are (a) the same in dollars and cents (b) different in dollars and cents (c) the same in percentage (d) always 25%.
- _____ 5. "Turnover" is an expression used in business for (a) the number of times per year an item is sold and replaced (b) the practice of moving stock to keep it fresh (c) the moving of feed to keep it from hardening (d) the total merchandise ordered at any one time.

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Topic Test
on
BUSINESS RECORDS: ORDERING AND RECEIVING MERCHANDISE

Student: _____ School: _____

Date: _____ Score: _____

Multiple Choice:

- _____ 1. A receiving record will include
 - a. Instructions for storage
 - b. Condition of merchandise
 - c. A catalog for future orders
- _____ 2. Freight charges are
 - a. Always
 - b. Never
 - c. Sometimes paid by the seller
- _____ 3. A bill of lading will list the
 - a. Number of packages in the shipment
 - b. Cost of each article
 - c. Suggested selling prices
- _____ 4. Statements of amounts due enumerating goods delivered are called:
 - a. Price lists
 - b. Bills of lading
 - c. Invoices

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920-III-6

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Topic Test
on
INVENTORIES

Student _____ School: _____

Date _____ Score: _____

True False

- | | | | |
|-------|-------|---|--|
| _____ | _____ | 1 | An inventory is an accurate record of merchandise on hand with its value |
| _____ | _____ | 2 | Physical inventories are unnecessary if perpetual inventories are kept |
| _____ | _____ | 3 | Inventory control helps to insure that enough goods are in the store |
| _____ | _____ | 4 | Physical inventories are made at the end of a firms' fiscal year |
| _____ | _____ | 5 | Physical inventory time is a good time to rearrange stock |

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920-III-7

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Topic Test
on
RECEIVING AND STORING MERCHANDISE

Student _____ School: _____
Date: _____ Score: _____

Multiple Choice

- _____ 1. Damage to a shipment should be noted (a) before unloading (b) as unloading proceeds (c) in the warehouse
- _____ 2. Notes on damage in shipment should be (a) phoned to the supplier (b) disregarded (c) noted on the receiving form.
- _____ 3. "Shortages" often may be checked by (a) weight (b) asking the driver (c) comparing with last shipment.
- _____ 4. Merchandise delivered usually will be "signed for" by (a) the owner (b) the cashier (c) the employee receiving merchandise.
- _____ 5. Checks for substitutions may be made by (a) phoning the company (b) comparing to order (c) comparing to bill of lading.

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920-III-8

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Topic Test
on
STOCKING AND MERCHANDISE PLANNING

Student: _____ School: _____
Date: _____ Score: _____

1. Merchandise ordered too early results in poor use of _____.
2. Merchandise ordered too late results in loss of _____.
3. Who should call to the attention of the owner or manager to stock getting low? _____.
4. Who should know the location of merchandise in the store? _____.
5. Which should be sold first, old stock or new stock? _____.

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925-IV-1

Topic Test
on
IMPORTANCE OF FERTILIZERS IN MODERN FARMING

Student: _____ School: _____

Date: _____ Score: _____

1. What are three ways production of most soils may be increased?

- a. _____
- b. _____
- c. _____

2. Three major advantages of fertilizing crops are:

- a. _____
- b. _____
- c. _____

3. In what way do plants resemble animals? _____

_____.

4. Plant food is lost from the soil by:

- a. _____
- b. _____
- c. _____

5. What are three sources of plant food?

- a. _____
- b. _____
- c. _____

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925-IV-2

~~925-IV-2~~

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Topic Test
on
WHAT IS FERTILIZER?

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper words or statements.

1. Plants must have plant _____ for _____ and _____.
2. A plant nutrient is any _____ contained in fertilizer and _____ to plant growth.
3. The three most essential plant nutrients are _____, _____, and _____.
4. Some plant food elements have to be _____ with other elements to be used by plants.
5. A "straight" fertilizer is a _____ bearing chemical compound.
6. There are _____ chemical elements considered essential to plant growth.
7. A unit of plant food is _____ percent of a ton.
8. A _____ fertilizer is a combination of needed plant food elements mixed together.
9. The three primary plant foods listed on a fertilizer label are _____, _____, and _____.

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925-IV=3

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Topic Test
on
FORMS OF FERTILIZER

Student: _____ School: _____

Date: _____ Score: _____

1. Name three common forms of fertilizer.
 - a. _____
 - b. _____
 - c. _____
2. Which liquid fertilizer turns to a gas when applied?

3. Name two forms of dry, solid fertilizer.
 - a. _____
 - b. _____
4. Which form of dry fertilizer is most commonly used?

5. What is the major value of animal manure?

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925-IV-4

Texas Education Agency
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Topic Test
on
HOW FERTILIZERS ARE MADE

Student: _____ School: _____

Date: _____ Score: _____

Place a T for true or F for false in the proper blank for each statement.

 T F

- ____ 1. Nitrogen was the first fertilizer produced in the United States.
- ____ 2. Ammonia is the basic material for all nitrogen fertilizers.
- ____ 3. Phosphate is made by mixing rock, phosphate, and sulphur.
- ____ 4. Potash comes mostly from Texas.
- ____ 5. Pesticides are now being added to fertilizers.

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925-V-1

Texas Education Agency
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Topic Test
on
TAKING AND USING SOIL SAMPLES
TO DETERMINE FERTILIZER NEEDS

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper words or statements.

1. Each field represents a different _____ problem.
2. A soil test is a _____ analysis of the soil.
3. To correct soil problems a farmer should start with a soil _____.
4. Always take soil _____ properly for best results.
5. PH is a scale of _____ or _____ of the soil.
6. Soil testing is usually done by _____ or _____ firms.
7. Soil tests gives pH, _____, _____, _____, and _____ for correcting problems.

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925-V-2

Texas Education Agency
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Topic Test
on
INTERPRETATION OF SOIL TEST RESULTS

Student: _____ School: _____

Date: _____ Score: _____

1. Name five items of information given on a soil test report.
 - a. _____.
 - b. _____.
 - c. _____.
 - d. _____.
 - e. _____.
2. How does pH or soil reaction affect crop yields?
3. Name four things that are considered together to determine the need for lime.
 - a. _____
 - b. _____
 - c. _____
 - d. _____
4. Does "plant nutrients needed per acre" mean pounds of fertilizer or pounds of actual plant food per acre.
5. If a soil test report recommended 40-0-0, how would you supply the farmers needs for fertilizer?

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925-V-3

Topic Test
on
THE pH RANGE AND ITS RELATION TO CROP PRODUCTION

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper words or statements.

1. Soil reaction or pH is the range of _____ or _____ of a soil.
2. The pH scale runs from _____ to _____.
3. Sour or acid soils run from _____ to _____.
4. Southern humid soils are usually more _____ because the loss of some elements by _____ and crop _____.
5. The _____ of some nutrients is changed by the _____ range.

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925-V-4

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Topic Test
on
LIMING SOILS

Student: _____ School: _____

Date: _____ Score: _____

Place a T for true and an F for false in the proper column before each statement.

 T F

- ___ ___ 1. Lime is the major treatment for acid soils.
- ___ ___ 2. Lime can only neutralize acid soils.
- ___ ___ 3. Ground limestone is the most common liming material.
- ___ ___ 4. Clay soils are usually more acid than other kinds of soils.
- ___ ___ 5. Liming helps soil by physical, chemical, and biological means.

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925-V-5

Topic Test
on
CORRECTING ALKALINE AND SALINE SOILS

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper word or statement.

1. The two kinds of soluble salts affecting the soil are _____ and _____.
2. The four things that usually cause soluble salts to occur are:
 - a. _____.
 - b. _____.
 - c. _____.
 - d. _____.
3. The two ways salinity affects plants are:
 - a. _____.
 - b. _____.
4. The usual method of reclaiming alkali soils is by _____ soil amendments.
5. The most accurate means of determining saline or alkaline problems is by a _____.

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Topic Test
on
NITROGEN FERTILIZERS

Student: _____ School: _____
Date: _____ Score: _____

Place a T for true and an F for false in proper column before each statement:

 T F

- | | | |
|---------------|---------------|--|
| <u> </u> | <u> </u> | 1. Sources of nitrogen for fertilizers are few. |
| <u> </u> | <u> </u> | 2. Ammonia is the base for most all nitrogen fertilizers. |
| <u> </u> | <u> </u> | 3. Bacteria cannot help produce nitrogen in plants. |
| <u> </u> | <u> </u> | 4. Nitrogen comes only in dry form. |
| <u> </u> | <u> </u> | 5. The ammonium form of nitrogen moves with soil moisture. |

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925-VI-2

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Topic Test
on
PHOSPHOROUS FERTILIZERS

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with correct words or statements:

1. _____ is the base for most phosphorous fertilizers.
2. _____ is the most commonly used phosphorous fertilizer,
3. _____ phosphate contains nitrogen.
4. The major liquid phosphorous fertilizer is _____.
5. Phosphate moves _____ in the soil from where it is placed.

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925-VI-3

Topic Test
on
POTASH FERTILIZERS

Student: _____ School: _____

Date: _____ Score: _____

1. What happens to pure potassium when exposed to air? _____
2. The 3 compounds that furnish most of the potash are:
 - a. _____
 - b. _____
 - c. _____
3. The state where most potash is produced is? _____
4. Name 3 other sources of potassium.
 - a. _____
 - b. _____
 - c. _____

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925-VI-4

Texas Education Agency
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Topic Test
on
SECONDARY TRACE ELEMENTS

Student: _____ School: _____

Date: _____ Score: _____

1. Name the 3 secondary plant elements.

a. _____

b. _____

c. _____

2. Name 5 micro or trace elements.

a. _____

b. _____

c. _____

d. _____

e. _____

3. Give the source of the following elements:

a. Calcium - _____

b. Sulphur - _____

c. Boron - _____

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Topic Test
on
FUNCTIONS OF PRIMARY PLANT FOODS

Students: _____ School: _____

Date: _____ Score: _____

1. Name 2 functions of each primary plant food.

a. Nitrogen

(1) _____

(2) _____

b. Phosphorous

(1) _____

(2) _____

c. Potash

(1) _____

(2) _____

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925-VII-2

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Topic Test
on
FUNCTIONS OF SECONDARY PLANT FOODS

Student: _____ School: _____

Date: _____ Score: _____

Name the 3 secondary plant foods and give one function of each:

1. _____
 - a. _____
2. _____
 - a. _____
3. _____
 - a. _____

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Topic Test
on
FUNCTIONS OF MICRO NUTRIENTS

Student: _____ School: _____

Date: _____ Score: _____

1. Name 5 micro nutrients.

a. _____

b. _____

c. _____

d. _____

e. _____

2. What is the common name for micro nutrients? _____

3. Are micro nutrients very deficient in most Texas soils? _____

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Topic Test
on
NUTRIENT DEFICIENCY SIGNS IN PLANTS

Student: _____ School: _____

Date: _____ Score: _____

1. Give the nutrient beside each deficiency sign:

- | | |
|-------|---|
| _____ | 1. Light green band along margin of leaves. |
| _____ | 2. Lack of seed in cotton and corn. |
| _____ | 3. Young leaves light green in color. |
| _____ | 4. Sickly yellowish green color. |
| _____ | 5. Purplish leaves, stems, and branches. |
| _____ | 6. Cotton leaves turn purple between green veins. |
| _____ | 7. Leaves have a wrinkled appearance. |
| _____ | 8. Rosette in pecans. |
| _____ | 9. "Firing" or drying up of leaves, starting at bottom. |
| _____ | 10. Sharply defined series of yellowish-green, light yellow or white streaks in leaf of corn. |

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Topic Test
on
PLANT GROWTH AND NUTRITIONAL UPTAKE

Student: _____ School: _____

Date: _____ Score: _____

Place a T for True or an F for False in the proper column by each statement:

- | <u>T</u> | <u>F</u> | |
|----------|----------|---|
| _____ | _____ | 1. Plants are like people and animals in their need for food to produce cells. |
| _____ | _____ | 2. Food is any substance that can be used as a source of energy for carrying on the life process. |
| _____ | _____ | 3. Photosynthesis is the combining of nitrogen and water by the chlorophyll (green color) in the presence of light. |
| _____ | _____ | 4. Respiration is the release of chemical energy by plants. |
| _____ | _____ | 5. The top of a plant is the chief water absorbing part of the plant. |
| _____ | _____ | 6. Cells do not need water to divide and function. |
| _____ | _____ | 7. Plants lose water by transpiration, bleeding and guttation. |
| _____ | _____ | 8. Nutrient absorption is increased or decreased in some ratios as cell growth and activity. |
| _____ | _____ | 9. One of the nutrients necessary for growth and energy is carbohydrates. |
| _____ | _____ | 10. A plant has a system of veins to transport nutrients. |

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Topic Test
on
PLANT FOOD REMOVED BY CROPS

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper words or statements:

1. Every crop harvested carries off great quantities of _____.
2. If plant food is not replaced, _____, _____, and _____ will suffer.
3. Some plant food is _____ in the soil and is lost.
4. Some plant food is carried off by _____ products.
5. To "hold your own" in soil fertility, the same amount of plant food carried off by crops must be _____.

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925-VIII-1

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Topic Test
on
THE ECONOMIC PRINCIPLES OF FERTILIZERS USE

Student: _____ School: _____

Date: _____ Score: _____

1. Profits are increased from fertilizer use by _____
and _____.
2. What percent of the production of major crops comes from fertilizer?

3. When does it pay to fertilize?

4. How does the use of fertilizer lower production cost?

5. Does the crop involved determine the economic use of fertilizer?

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925-VIII-2

Topic Test
on
SOIL FACTORS THAT AFFECT RESPONSE TO FERTILIZERS

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blank with the proper word or statement.

1. Soils vary in response to fertilizer because of the following factors:
 - a. _____
 - b. _____
 - c. _____
 - d. _____
2. Organic matter improves fertilizer response by _____ the soil,
_____ more moisture and furnishing _____ for micro-organisms.
3. Soil _____ influences response to fertilizer by
holding more moisture and nutrients and opening the structure of the soil.
4. Soil reaction or pH affects fertilizer response by affecting the availability
of _____.
5. Chemical _____ of soils vary, thus causing soils to respond
differently to the same fertilizer application.

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925-VIII-3

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Topic Test
on
RATIOS AND MINIMUM GRADES OF FERTILIZERS

Student: _____ School: _____

Date: _____ Score: _____

Place a T for true and an F for false in the proper column beside each statement.

 T F

- | | | |
|-------|-------|--|
| _____ | _____ | 1. The grade of a fertilizer is the minimum guarantee of plant food contained in a fertilizer. |
| _____ | _____ | 2. The grade is expressed in pounds of pure plant food. |
| _____ | _____ | 3. Ratio is the amount of one nutrient compared to another in the mixture. |
| _____ | _____ | 4. A "complete" fertilizer contains all plant nutrients for a plant. |
| _____ | _____ | 5. An incomplete fertilizer contains one or two primary plant foods. |

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925-VIII-4

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Topic Test
on
CALCULATIONS FOR RECOMMENDATIONS

Student: _____ School: _____

Date: _____ Score: _____

1. Name two ways to determine the fertilizer to buy for a given soil test recommendation.

a. _____

b. _____

2. Give the ratio of a 6-12-6 fertilizer.

3. How much 20-0-0 would it take to supply a soil test recommendation of 80-0-0?

4. Give the amount 10-20-10 it would take to supply a 30-60-30 recommendation.

5. How many pounds of N, P, and K are in an 80 lb. sack of 12-24-12.

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925-IX-1

Topic Test
on
**PRINCIPLES INVOLVED IN FERTILIZER
PLACEMENT AND USE**

Student: _____ School: _____
Date: _____ Score: _____

Fill in the blanks with the proper word or statement:

1. The method of _____ may affect the yield of a crop as much as the _____.
2. The primary aim in applying fertilizers is to get the proper _____ in the _____ where it will do the most _____.
3. Poor fertilizer distribution gives some _____ too much nutrients and others too _____.
4. When soil is _____ plant nutrients cannot be absorbed easily by the plant.
5. Fertilizer applied too close to seed or roots will _____ plants.
6. _____ moves very little from where it is placed.
7. Fertilizer placed on the _____ causes the loss of nutrients by _____ and _____.
8. Fertilizer placed in _____ near the row does not feed _____ in the middle.
9. Zinc can be applied by _____ the leaves.
10. Soil _____ affects the amount of application and frequency of application of fertilizers.

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925-IX-2

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Topic Test
on
COMMON METHODS OF APPLYING FERTILIZERS

Student: _____ School: _____
Date: _____ Score: _____

Place a T for true and an F for false in the proper column beside each statement

<u>T</u>	<u>F</u>	
_____	_____	1. Fertilizers are usually applied as dry, liquid or gas.
_____	_____	2. Crop and equipment have nothing to do with the method of application.
_____	_____	3. Banding fertilizer along row, feeds weeds in the middle.
_____	_____	4. Foliar application is spraying on leaves.
_____	_____	5. Top dressing is not used on small grain or pasture.
_____	_____	6. Airplanes distribute dry granular fertilizer or liquid.
_____	_____	7. Type of soil helps to determine method of application.
_____	_____	8. Nitrogen solutions have aided nitrogen applications.
_____	_____	9. Starter solutions only help producing plants.
_____	_____	10. You cannot fertilize in irrigation water.

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925-IX-3

Texas Education Agency
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Topic Test
on
TIME OF FERTILIZER APPLICATION

Student: _____ School: _____

Date: _____ Score: _____

Fill in the blanks with the proper word or statement:

1. Most of the fertilizer placed in the U. S. is placed during _____, _____ and _____.
2. Applying fertilizer in a few months makes it more _____.
3. Storing fertilizer requires a _____ place which is usually _____.
4. Early application of fertilizers sometimes causes more nutrient loss by _____ and _____.
5. Organic matter decomposing _____ absorb much of the nutrients especially nitrogen, and hold it until the soil warms up.

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925-IX-4

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Topic Test
on
FERTILIZER APPLICATION EQUIPMENT

Student: _____ School: _____

Date: _____ Score: _____

1. A Fertilizer applicator should

a. _____

b. _____

2. Five general systems of fertilizer applications are:

a. _____

b. _____

c. _____

d. _____

e. _____

3. Name five types of applicators for fertilizer.

a. _____

b. _____

c. _____

d. _____

e. _____

4. Name four things to do in caring for fertilizer applicators.

a. _____

b. _____

Fertilizer Application Equipment
(Topic Test Continued)

c. _____

d. _____

5. List two conditions which make airplane fertilizer distribution advantageous.

a. _____

b. _____

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925-X-1

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Topic Test
on
**REGULATIONS CONTROLLING FERTILIZER
MANUFACTURE AND USE**

Student: _____ School: _____

Date: _____ Score: _____

Place a T for true or an F for false in the proper column beside each statement:

 T F

- | | | |
|-------|-------|---|
| _____ | _____ | 1. The Texas Feed and Fertilizer Control Service controls fertilizer manufacture and use in Texas. |
| _____ | _____ | 2. Fertilizer manufacturers do not have to guarantee analysis or grade. |
| _____ | _____ | 3. Commercial fertilizer cannot contain animal excretions. |
| _____ | _____ | 4. Bulk is any fertilizer sold by the ton. |
| _____ | _____ | 5. Grade is percent of nitrogen phosphorous and potash. |
| _____ | _____ | 6. Specialty fertilizers do not have to be labeled for special use. |
| _____ | _____ | 7. Fertilizers may contain pesticides. |
| _____ | _____ | 8. The fee for inspection of fertilizer manufacture is \$25.00 per ton. |
| _____ | _____ | 9. A fertilizer material is any material containing any essential plant nutrient available to plants and used for promoting plant growth. |
| _____ | _____ | 10. All states do not penalize for lack of guaranteed analysis. |